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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	99.145	63.793	106.121	-	106.121	107.166	75.740	68.849	58.101	Continuing	Continuing
CF3: Integrated Soldier Systems (SL CFT)	-	0.000	0.000	4.504	-	4.504	4.601	4.429	4.502	4.584	0.000	22.620
ES9: Advanced Tactical Parachute System	-	5.607	6.702	6.617	-	6.617	1.829	2.965	2.964	3.000	0.000	29.684
EW4: Crew Served Weapons Engineering Development	-	12.999	11.102	2.589	-	2.589	15.767	14.789	13.927	9.029	0.000	80.202
FF2: Small Arms Fire Control	-	17.914	10.188	21.463	-	21.463	10.163	11.254	8.000	10.000	0.000	88.982
FI2: Lightweight 30mm Cannon	-	8.280	0.000	1.384	-	1.384	0.000	0.000	0.000	0.000	0.000	9.664
FL8: 84mm MAAWS Ammunition	-	0.000	0.000	4.040	-	4.040	3.134	3.000	0.000	0.000	0.000	10.174
FM4: Next Generation Squad Weapons	-	0.000	0.000	33.080	-	33.080	36.880	13.780	15.470	16.060	0.000	115.270
S58: Soldier Enhancement Program	-	6.232	9.081	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.313
S60: Clothing & Equipment	-	6.780	8.348	6.453	-	6.453	6.724	5.015	4.850	3.700	0.000	41.870
S61: Acis Engineering Development	-	3.908	3.608	2.988	-	2.988	2.864	2.924	2.967	1.450	Continuing	Continuing
S62: Counter-Defilade Target Engagement - SDD	-	0.000	1.998	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.998
S63: Individual Weapons Engineering Development	-	9.664	5.749	7.076	-	7.076	15.377	7.918	6.284	0.974	0.000	53.042
S64: Common Remotely Operated Wpn Sys (CROWS)	-	24.753	0.000	9.300	-	9.300	1.500	0.000	0.000	0.000	0.000	35.553
S70: Personnel Recovery Support System (PRSS)	-	1.283	0.967	0.000	-	0.000	0.000	0.000	0.395	0.797	Continuing	Continuing
VS5: Soldier Protective Equipment	-	1.725	6.050	6.627	-	6.627	8.327	9.666	9.490	8.507	0.000	50.392

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Note FY 2019 New starts include Next Generation Squad Automatic Rifle (NGSAR) and Increased Barrel Life Replace Chrome.		
A. Mission Description and Budget Item Justification Fiscal Year (FY) 2019 budget request funds Infantry Support Weapons. This Program Element (PE) Engineering and Manufacturing Development (EMD) manages the Soldier as a system, with the goal of increasing Soldiers' combat effectiveness, increasing survivability, and improving the Soldiers' quality of life. It develops and tests prototypes of weapons, clothing, equipment, and other items useful to support the Soldier. Project CF3 (Integrated Soldier Systems (SL CFT)) supports the Adaptive Soldier Architecture (ASA) effort that will develop a full system architecture for the Soldier and the Squad. The focus will be full integration of all mission-specific equipment into the ASA as well as full configuration management of the Configuration Database, Architecture Assessment Tool and Squad Performance Model. Project ES9 (Advanced Tactical Parachute System) supports efforts to improve Static Line (SL) and Military Free Fall (MFF) personnel parachutes and associated equipment to include canopy improvements based on integration of new technology with the goal of enhancing the insertion capability of the airborne soldier and increasing the performance, safety and durability of personnel airdrop equipment. Project EW4 (Crew Served Weapons Engineering) supports efforts to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapons to demonstrate, test and evaluate capability near or at planned operational requirements. Project FF2 (Small Arms Fire Control (SAFC)) supports optimized fire control devices to support Squad (S), Crew Served (CS) and Precision (P). SAFC shall increase the probability of hit and decrease time to engage across a range of small arms weapon systems, with a direct-view optic that allows for quicker and more accurate target detection and recognition. Project FI2 (Lightweight 30mm Cannon) provides increased lethality modification to Product Directorate Counter-Rocket Artillery Mortars (PD C-RAM) under a JUONS. An upgraded medium caliber weapon will be developed, tested and evaluated for integration into a modified remote weapon station under an Urgent Materiel Release (UMR). Project S58 (Soldier Enhancement Program) supports accelerated integration, modernization, and enhancement efforts of lighter, more lethal weapons, and improved Soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids. Project S60 (Clothing and Equipment) supports pre-production development of state-of-the-art individual clothing and equipment to improve the survivability, mobility and sustainment affecting the quality of life of the individual Soldier.		

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Project S61 (Aircrew Integrated Systems) provides System Development programs with improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light Utility Helicopter, and Armed Reconnaissance Helicopter.						
Project S62 (Counter-Defilade Target Engagement) the XM25, Individual Airburst Weapon System (IAWS) delivers a 25mm programmable high explosive airburst (HEAB) round to defeat defilade and point area targets out to approximately 600 meters. Accurate and lethal engagement of defilade targets at the squad level is the number one capability gap identified by the United States Army Infantry Center (USAIC).						
Project S63 (Small Arms Improvements) demonstrates engineering development models or integrated commercial items designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and ammunition. Programs include Improved Weapons Coatings, Personal Defense Weapon, 30 Round 5.56mm Magazine, Modular Handgun System (MHS), Precision Sniper Rifle (PSR), Sub Compact, and Interim Combat Service Rifle (ICR).						
Project S64 (CROWS) continues enhancing CROWS capability and reliability to increase its application across combat and tactical platforms. This capability enhances the Soldier's survivability, lethality and situational awareness.						
Project S70 (Personnel Recovery Support System) provides system research, development and testing of the Personal Recovery Support System/Personnel Recovery Support Equipment supporting operations to report and locate isolated, missing, detained or captured Soldiers.						
Project VS5 (Soldier Protective Equipment) supports engineering and manufacturing development of Individual Soldier Ballistic Protection equipment. It will leverage advancements in technology to continue incremental improvements to body armor (to include improved outer tactical vests, plate carriers, and helmets) and other personal protective equipment.						
B. Program Change Summary (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		87.643	83.155	82.105	-	82.105
Current President's Budget		99.145	63.793	106.121	-	106.121
Total Adjustments		11.502	-19.362	24.016	-	24.016
• Congressional General Reductions		-0.062	-0.062			
• Congressional Directed Reductions		-4.600	-32.000			
• Congressional Rescissions		-	-			
• Congressional Adds		13.449	12.700			
• Congressional Directed Transfers		-	-			
• Reprogrammings		5.752	-			
• SBIR/STTR Transfer		-3.037	-			
• Adjustments to Budget Years		-	-	24.016	-	24.016

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	
Congressional Add Details (\$ in Millions, and Includes General Reductions)		FY 2018	FY 2019
Project: EW4: <i>Crew Served Weapons Engineering Development</i>			
Congressional Add: <i>FY 2019 Congressional Add: Cannon Life Extension & Shoulder launched munition evaluation</i>		-	3.500
Congressional Add Subtotals for Project: EW4		-	3.500
Congressional Add Totals for all Projects		-	3.500
<u>Change Summary Explanation</u> FY 2019 \$2M Congressional Add for Shoulder launched munition evaluation & \$1.5M for Cannon life extension program FY 2020 funding increase is for the development of Next Generation Squad Automatic Rifle (NGSAR).			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) CF3 / Integrated Soldier Systems (SL CFT)			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
CF3: Integrated Soldier Systems (SL CFT)	-	0.000	0.000	4.504	-	4.504	4.601	4.429	4.502	4.584	0.000	22.620
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Adaptive Squad Architecture (ASA) and Squad Performance Model (SPM) are Program Executive Office Soldier (PEO S) led efforts which will allow optimization of the Soldier and the Squad. The focus of CF-3 will be the full integration of all mission-specific equipment (CF-2 incorporates Soldier base/ common kit) into the ASA and SPM as well as full configuration management of the Configuration Database (CD), Architecture Assessment Tool (AAT) and SPM. This will be accomplished by continued development of Interface Control Documents (ICDs) in order to provide common established interfaces for external stakeholders who will interface on or with the Soldier platform. The ASA and SPM will continue to refine a metrics-based approach that will include live, virtual, and constructive tools across the DoD, academia, and industry which will be used for senior leaders to make deliberate decisions based on the analysis of Soldier/Squad Performance.

FY20 RDTE funding in the amount of \$4.504M will provide a fully integrated Adaptive Squad Architecture and Squad Performance Model by which Soldiers/ Squads equipped with new components can be tested, both in physical and virtual environments, for improved Squad performance.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Integrated Soldier Systems	-	-	4.504	-	4.504
Description: Test, maintain and evolve a Soldier/squad equipment configuration baseline and conduct configuration management at the system level. Physically integrate components, improve compatibility and interoperability across programs. Establish and maintain tools that provide Systems Engineering, Configuration Management and Evaluation in a virtual and physical environment. Conduct Squad Performance Model (SPM) evaluations and integrate mission-specific equipment into the Adaptive Squad Architecture (ASA) with continued emphasis on development of ICDs, evaluations, and improved fidelity of the SPM.					
FY 2020 Base Plans: Integration of mission-specific equipment, other combat platforms into initial version of ASA. Conduct evaluations in support of the SPM.					
FY 2019 to FY 2020 Increase/Decrease Statement: New start. Critical task of Adaptive Squad Architecture will be to allow Army Futures Command, Soldier Lethality Cross Functional Team, and PEO Soldier leadership to make immediate quantitative analysis of proposed components (ie next-gen weapons, future body-armor, etc) for acquisition.					
Accomplishments/Planned Programs Subtotals	-	-	4.504	-	4.504

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) CF3 / <i>Integrated Soldier Systems (SL CFT)</i>	

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

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CF2: <i>Integrated Soldier Systems Prototyping (SL CFT)</i>	-	-	1.959	-	1.959	2.543	3.152	3.774	3.847	0.000	15.275

Remarks

D. Acquisition Strategy

Assistant Program Executive Office, Futures and Integration (APEO F&I) will utilize available Adaptive Squad Architecture (ASA) and Squad Performance Model (SPM) tools, current Systems Engineering and Technical Assistance (SETA) contracts as well as tools/deliverables built under CF2 to validate, verify and operationally test the ASA and SPM, in both physical and virtual environments. APEO will utilize CF3 to leverage any data, architectural products or designs from the Army's Heads-up Display (HUD) v3.0 (a separate project).

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) CF3 / Integrated Soldier Systems (SL CFT)					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
ASA and SPM Engineering, Manufacturing, Development	MIPR	TBD : Various	-	-		-		2.504	Jan 2020	-		2.504	0.000	2.504	-
Subtotal			-	-		-		2.504		-		2.504	0.000	2.504	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Physical evaluations to support ASA and SPM	MIPR	Various : To Be Determined	-	-		-		2.000	Jan 2020	-		2.000	0.000	2.000	-
Subtotal			-	-		-		2.000		-		2.000	0.000	2.000	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		4.504		-		4.504	0.000	4.504	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army																Date: March 2019												
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons								Project (Number/Name) CF3 / Integrated Soldier Systems (SL CFT)										
Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Soldier Lethality Support																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons	Project (Number/Name) CF3 / Integrated Soldier Systems (SL CFT)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Soldier Lethality Support	2	2020	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army									Date: March 2019			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) ES9 / Advanced Tactical Parachute System			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
ES9: Advanced Tactical Parachute System	-	5.607	6.702	6.617	-	6.617	1.829	2.965	2.964	3.000	0.000	29.684
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Funding line established in FY17 for the Advanced Tactical Parachute System. Efforts were previously executed in Program Element 0604601A S60.												
A. Mission Description and Budget Item Justification Advance Tactical Parachute System funding supports efforts to improve Low Altitude and High Altitude personnel parachutes and associated equipment to include test and evaluation of items transitioning from Advanced Component Development and prototype (6.4) efforts, with the goal of enhancing the insertion capability of the airborne Soldier and increasing the performance, safety and durability of personnel airdrop equipment. Funds improvements and testing/evaluation of personnel parachute systems. Includes integration and interface on the Soldier system.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Advanced Tactical Parachute System								5.607	6.702	6.617	-	6.617
Description: Advance Tactical Parachute System funds improvements and testing/evaluation of personnel parachute systems. Project supports efforts to improve Low Altitude and High Altitude personnel parachutes and associated equipment to include test and evaluation of items transitioning from Advanced Component Development and prototype (6.4) efforts, with the goal of enhancing the insertion capability of the airborne Soldier and increasing the performance, safety and durability of personnel airdrop equipment.												
FY 2019 Plans: Complete down select and Developmental Test (DT) for Enhanced Electronic Automatic Activation Device (EEAAD) and prepare to move into operational test. Complete design validation for the T11-R, down select final configuration and complete DT. Obtain materiel development decision and conduct design validation testing of Parachutists Oxygen Device System (PODS) potential candidate systems in preparation for down select. Continue to conduct of testing to support modernization initiatives to parachute systems to include T-11 material upgrades; RA-1 Double Bag Static Line (DBSL) over the ramp jumps on C-17 aircraft; service life extension for RA-1, T-11, and MC-6 parachutes; glide modulation capability of the RA-1 parachute system; and automated parachute management tracking system development and integration for RA-1, T-11, and MC-6 parachute systems.												
FY 2020 Base Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) ES9 / Advanced Tactical Parachute System			
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Complete OT for EEAAD in support of MS C decision and full materiel release. Complete PODS DT and prepare to enter OT. Conduct DT for Military Altimeters. Continue to conduct testing for service life extension for RA-1, T-11, and MC-6 parachutes; glide modulation capability of the RA-1 parachute system; and automated parachute management tracking system development and integration for RA-1, T-11, and MC-6 parachute systems; and support modernization initiatives to parachute systems.											
FY 2019 to FY 2020 Increase/Decrease Statement: Funding change in Advanced Tactical Parachute portfolio is due to anticipated requirement changes in FY19 and FY20.											
Accomplishments/Planned Programs Subtotals						5.607	6.702	6.617	-	6.617	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• MA7801: Advanced Tactical Parachute System	28.440	41.104	43.622	-	43.622	53.077	47.805	39.849	39.017	0.000	292.914
• ET8: Personnel Airdrop System Development	0.476	0.396	0.297	-	0.297	1.267	1.265	1.813	1.000	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) Traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of complexity and testing required.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) ES9 / Advanced Tactical Parachute System					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Dev Contracts	C/FFP	Various : Various	1.574	4.000		3.410		3.317		-		3.317	0.000	12.301	Continuing
Dev Sys Engineering Spt	MIPR	Various : Various	0.200	0.200		0.200		0.200		-		0.200	0.000	0.800	Continuing
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.245		-		-		-	0.000	0.245	-
Subtotal			1.774	4.200		3.855		3.517		-		3.517	0.000	13.346	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Misc Support Costs	MIPR	NSRDEC : Natick, MA	0.200	0.331		0.400		0.400		-		0.400	0.000	1.331	Continuing
Subtotal			0.200	0.331		0.400		0.400		-		0.400	0.000	1.331	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
DT/OT	MIPR	various : various	0.884	1.076		2.447		2.700		-		2.700	0.000	7.107	Continuing
Subtotal			0.884	1.076		2.447		2.700		-		2.700	0.000	7.107	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			2.858	5.607		6.702		6.617		-		6.617	0.000	21.784	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army

Date: March 2019

Appropriation/Budget Activity

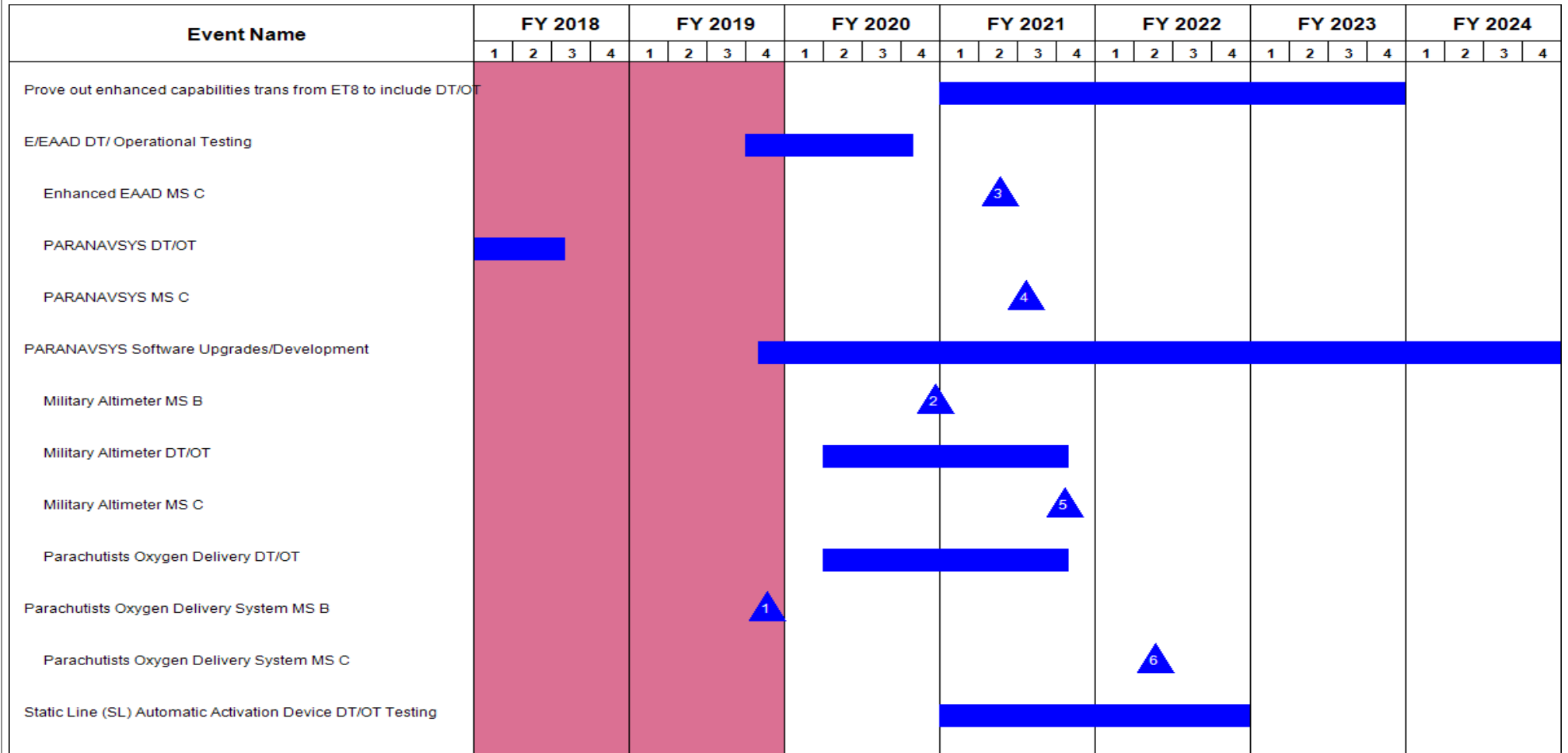
2040 / 5

R-1 Program Element (Number/Name)

PE 0604601A / *Infantry Support Weapons*

Project (Number/Name)

ES9 / *Advanced Tactical Parachute System*



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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) ES9 / <i>Advanced Tactical Parachute System</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prove out enhanced capabilities trans from ET8 to include DT/OT	1	2021	4	2023
E/EAAD DT/ Operational Testing	4	2019	4	2020
Enhanced EAAD MS C	2	2021	2	2021
PARANAVSYS DT/OT	1	2017	3	2018
PARANAVSYS MS C	3	2021	3	2021
PARANAVSYS Software Upgrades/Development	4	2019	4	2024
Military Altimeter MS B	4	2020	4	2020
Military Altimeter DT/OT	2	2020	4	2021
Military Altimeter MS C	4	2021	4	2021
Parachutists Oxygen Delivery DT/OT	2	2020	4	2021
Parachutists Oxygen Delivery System MS B	4	2019	4	2019
Parachutists Oxygen Delivery System MS C	2	2022	2	2022
Static Line (SL) Automatic Activation Device DT/OT Testing	1	2021	4	2022

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Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) EW4 / Crew Served Weapons Engineering Development			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
EW4: Crew Served Weapons Engineering Development	-	12.999	11.102	2.589	-	2.589	15.767	14.789	13.927	9.029	0.000	80.202
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2020 New starts include Individual Non-Lethal System, Current and Legacy Weapon Improvements, and Next Generation Optics.

Previously funded: Increased Barrel Life/Replace Chrome and Weapon Upgrades and Accessories are now funded under Current and Legacy Weapon Improvements. Mounted Machine Gun Optic and Optic Upgrades are now funded under Next Generation Optics.

A. Mission Description and Budget Item Justification

The Crew Served Weapons Engineering and Manufacturing Development (EMD) program provides funds to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapon systems to demonstrate, test and evaluate capability near or at planned operational requirements. Crew Served Weapons systems include weapons ranging up to 40 millimeter in caliber. Current and future efforts focus on system improvements designed to enhance lethality, target acquisition, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include system development, integration (to include human-systems), demonstration, test and evaluate components, prototypes and operational system prototypes of small arms weapon systems and/or enhancements. Benefits include continuous improvements to small arms weapon systems, fire control equipment, optics, gun barrels, ancillary equipment, training devices, component mounts, weapon mounts, and weapon/ammunition interface of current small arms fleet or new weapon systems.

The AT4 Confined Space - Tandem Warhead (AT4CS-TW) will be a shoulder launched munition (SLM) capability for combat units at the individual Soldier level. As an improvement over existing SLM, the solution will allow Soldiers to conduct Urban Operations with an ability to defeat the enemy protected by a variety of field expedient, structural and lightly armored vehicles. This solution will be effective day or night at close ranges with an ability to safely engage targets from within enclosures using single hearing protection. This solution will combine the capability of multiple existing SLM which will allow for reduced Soldier load, training complexity and logistics burden for Light Infantry, Combat Engineers and Special Operations Forces. FY2019 funding will provide the Army the opportunity to reduce the weight of the AT4CS-TW, lightening the Soldier's load further.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: New Weapon Systems	10.198	5.029	1.230	-	1.230
Description: Development of new crew served weapons					
FY 2019 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) EW4 / Crew Served Weapons Engineering Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Coordinate and develop the Capability Development Document (CDD), Acquisition Strategy, Capability Production Document (CPD), and provide data from various technologies to better inform stakeholders. Begin EMD phase for the Next Generation Squad Automatic Rifle with a single vendor.						
M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS): Complete developmental testing and obtain Type Classification and Full Materiel Release for M3E1 w/Fire Control.						
Precision Sniper Rifle (PSR): Continue supporting SOCOM source selection activities and testing of up-to three (3) PSR systems with a down-select decision to one (1). Will purchase PSRs and/or fund additional Army unique Production Qualification Testing, IOT&E, and airborne deployment testing. New Weapon Evaluations and Assessments: Will perform initial evaluation and assessment of new weapons.						
FY 2020 Base Plans:						
Precision Sniper Rifle (PSR): Will support ammunition specific testing, development of a spare parts contract, Life Cycle sustainment planning efforts, and activities to support a Milestone C / Type Classification-Standard decision for PSR weapon system and two ammunition cartridges.						
New Weapon Systems Evaluations and Assessments: Will continue to perform initial evaluation and assessment of new weapon systems.						
FY 2019 to FY 2020 Increase/Decrease Statement:						
FY 2020 Decrease in funding due to funds being moved to a new project line under same Program Element.						
Title: Crew Served Weapons Enhancements		1.756	0.850	0.849	-	0.849
Description: Enhancements and developments of Crew Served weapons						
FY 2019 Plans:						
Compact Semi-Automated Sniper System (CSASS): Completes production Qualification testing (PQT) as an entry criteria for the Limited user Test (LUT). Conducts operational assessments and evaluations with a LUT as well as airborne drop testing. Completes LOG Demo, ILS assessments, technical manuals and fielding plan in preparation for Material Release Board and TC STD.						
M2 Lightweight Program - Investigate alternative materials (i.e. titanium) in order to lighten the Warfighter's load, to improve Soldier mobility, respond to vehicle weight restrictions, improve weapon parts life, increase durability						

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) EW4 / Crew Served Weapons Engineering Development		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
and potentially increase performance. Manufacture lightweight titanium weapon parts, assemble improved parts into legacy weapons, conduct testing (production verification/reliability/user evaluation/air drop) on the improved weapon system and modify weapons based on test results.						
Small Business Innovation Research (SBIR) Enhancements: Continue to support Phase II Enhancement and/or initialization of Phase III SBIR activities.						
Gunner Integrated Protection and Restraint System, Objective Gunner Protection Kit (GIPRS/OGPK): Complete developmental verification testing and begin operational testing for the TOW Missile Objective Gunner Protection Kit (TOGPK) 2.0. Will begin work on technical publications and prepare for TOGPK 2.0 type classification.						
Weapon Upgrades and Accessories: Will continue to test, evaluate and analyze ongoing and new activities to enhance Crew Served Weapons.						
FY 2020 Base Plans: FY 2020 New Start: Individual Non-Lethal System: Will work to address technical issues identified during prove out test, refine user requirements and initiate hardware contract for verification test in support of Type classification.						
FY 2020 New Start: Current and Legacy Weapon Improvements: Will assess and evaluate selected capabilities and improvements for all current and legacy weapon systems.						
Small Business Innovation Research (SBIR) Enhancements: Will continue to support Phase II Enhancement and/or initialization of Phase III SBIR activities.						
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Increase in funding due to new start for Individual Non-Lethal System.						
Title: Ammunition		-	0.100	0.025	-	0.025
Description: Improvement of Crew Served Weapons Ammunition						
FY 2019 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons	Project (Number/Name) EW4 / Crew Served Weapons Engineering Development				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Ammunition Upgrades: Will continue to test, evaluate and analyze the effect of current and new ammunition on Crew Served Weapons. Specific focus on alignment of requirements between crew served fire control and 40mm air burst munitions. FY 2020 Base Plans: Ammunition Upgrades: Will continue to test, evaluate and analyze the effect of current and new ammunition on Crew Served Weapons. FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Decrease in funding to support the National Defense Strategy.						
Title: Combat Optics Description: Improvement of Combat Optics FY 2019 Plans: Mounted Machinegun Optic: Begin Mk19 MMO pre-planned product improvement (PPPI) R&D efforts for integration with airburst ammo programmer. Optic Upgrades: Continue engineering evaluations, verification and validation of weapon optics performance requirements. FY 2020 Base Plans: FY 2020 New Start: Next Generation Optics: Will integrate current and emerging target acquisition component technologies into a variable magnification spotting scope and into binoculars. Mounted Machinegun Optic: Will continue integration efforts with airburst ammo through engineering studies and evaluation of emerging technologies for Mk19 MMO PPPI. FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Increase in funding to support Next Generation Optics.		1.045	0.539	0.460	-	0.460
Title: Research and Analysis Description: Market Research and Cost Benefit Analysis FY 2019 Plans:		-	0.100	0.025	-	0.025

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development. FY 2020 Base Plans: Will continue Market Research and Cost Benefit Analysis of new small arms weapon systems and/or enhancements for engineering and manufacturing development. FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Decrease in funding is due to the reduction in the crew served fire control requirement.					
Title: FY2019 SBIR / STTR Transfer FY 2019 Plans: FY2019 SBIR / STTR Transfer FY 2019 to FY 2020 Increase/Decrease Statement: FY2019 SBIR / STTR Transfer	-	0.984	-	-	-
Accomplishments/Planned Programs Subtotals	12.999	7.602	2.589	-	2.589
	FY 2018	FY 2019			
Congressional Add: FY 2019 Congressional Add: Cannon Life Extension & Shoulder launched munition evaluation	-	3.500			
FY 2019 Plans: FY 2019 Congressional Add: Cannon Life Extension & Shoulder launched munition evaluation					
Congressional Adds Subtotals	-	3.500			

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

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020 Base</u>	<u>FY 2020 OCO</u>	<u>FY 2020 Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• S54: <i>Small Arms Improvement</i>	27.832	7.677	14.555	-	14.555	16.097	19.232	17.439	10.487	0.000	113.319
• FL8: <i>84mm MAAWS Ammunition</i>	-	-	4.040	-	4.040	3.134	3.000	-	-	0.000	10.174
• FM4: <i>Next Generation Squad Weapons</i>	-	-	33.080	-	33.080	36.880	13.780	15.470	16.060	0.000	115.270
• GZ1500: <i>Sniper Rifles Modifications</i>	1.488	2.747	2.426	-	2.426	1.900	1.857	1.892	1.794	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) EW4 / Crew Served Weapons Engineering Development			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• GZ1290: M249 SAW Machine Gun MODS	3.339	3.924	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• GZ1300: M240 Medium Machine Gun MODS	4.577	6.947	8.000	-	8.000	8.000	8.000	8.000	8.000	Continuing	Continuing
• GB3000: MK-19 Grenade Machine Gun MODS	2.000	1.684	3.737	-	3.737	6.708	11.678	14.383	-	Continuing	Continuing
• GB4000: M2 50 Cal Machine Gun MODS	50.414	19.098	0.000	6.090	6.090	-	0.849	0.849	0.857	Continuing	Continuing
• GC0925: Modifications Less Than \$5.0m (WOCV-WTCV)	2.219	5.577	4.327	-	4.327	2.606	2.362	2.338	2.716	Continuing	Continuing
• GL3200: Items Less Than \$5.0m (WOCV-WTCV)	5.075	4.571	3.066	-	3.066	2.766	2.869	2.977	3.174	Continuing	Continuing
• G13000: M240 Medium Machine Gun (7.62mm)	9.874	14.581	0.000	0.900	0.900	-	-	-	-	Continuing	Continuing
• G01506: Precision Sniper Rifle	-	-	7.977	-	7.977	10.147	12.112	6.292	5.218	Continuing	Continuing
• G13101: MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM	26.520	19.880	19.420	2.400	21.820	20.282	26.716	26.035	0.866	Continuing	Continuing
Remarks											
In support of Small Arms Requirements, components or prototypes developed in Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) is transitioned to Crew Served Weapons Engineering Development, Project EW4, Program Element 0604601A, (Budget Activity 5) to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon systems production or modification program.											
D. Acquisition Strategy											
Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E) hardware contracts, and test and evaluate systems that result in type classification and follow-on production contract awards.											
The AT4CS-TW will be included as a line item in the FY2019-FY2023 combined AT4-MAAWS production contract.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) EW4 / Crew Served Weapons Engineering Development					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	Allot	PM Soldier Weapons, : Picatinny Arsenal	0.200	0.851	Mar 2018	0.220	Mar 2019	-		-		-	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Weapons, : Picatinny Arsenal	0.040	0.180	Mar 2018	0.135	Mar 2019	0.010	Mar 2020	-		0.010	Continuing	Continuing	Continuing
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	-	-		0.984	Nov 2018	-		-		-	Continuing	Continuing	Continuing
Subtotal			0.240	1.031		1.339		0.010		-		0.010	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Fabrication	Various	Various : Multiple Contractors	0.200	0.350	Mar 2018	5.628	Mar 2019	0.300	Mar 2020	-		0.300	Continuing	Continuing	Continuing
Hardware Development	MIPR	Army Research Development Engineers Centers : Multiple	0.074	4.200	Mar 2018	1.900	Mar 2019	0.050	Mar 2020	-		0.050	Continuing	Continuing	Continuing
Subtotal			0.274	4.550		7.528		0.350		-		0.350	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering	MIPR	Army Research Development Engineering Centers : Multiple	3.174	3.675	Mar 2018	0.675	Mar 2019	1.000	Mar 2020	-		1.000	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) EW4 / Crew Served Weapons Engineering Development					
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Logistics	MIPR	Tank & Automotive Command (TACOM), : Warren	0.269	0.230	Mar 2018	0.070	Mar 2019	0.050	Mar 2020	-		0.050	Continuing	Continuing	Continuing
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	0.269	0.168	Mar 2018	0.070	Mar 2019	0.050	Mar 2020	-		0.050	Continuing	Continuing	Continuing
Subtotal			3.712	4.073		0.815		1.100		-		1.100	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Developmental Testing	MIPR	Army Developmental Test Command, : Aberdeen Proving Ground	1.365	1.850	Mar 2018	0.850	Mar 2019	1.000	Mar 2020	-		1.000	Continuing	Continuing	Continuing
Operational Testing	MIPR	Army Test and Evaluation Command, : Aberdeen Proving Ground	1.848	1.220	Mar 2018	0.500	Mar 2019	0.080	Mar 2020	-		0.080	Continuing	Continuing	Continuing
Validation Testing	MIPR	Army Test and Evaluation Centers, : Multiple	0.269	0.275	Mar 2018	0.070	Mar 2019	0.049	Mar 2020	-		0.049	Continuing	Continuing	Continuing
Subtotal			3.482	3.345		1.420		1.129		-		1.129	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			7.708	12.999		11.102		2.589		-		2.589	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
NEW WEAPON SYSTEMS																												
Next Generation Squad Weapon-Automatic Rifle																												
M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon Syst																												
Precision Sniper Rifle (PSR)																												
New Weapon Systems Evaluations and Assessments																												
CREW SERVED WEAPON ENHANCEMENTS																												
Compact Semi-Automatic Sniper System (CSASS)																												
Increased Barrel Life/Replace Chrome																												
M2 Lightweight Program																												
Weapons Upgrades and Accessories																												
Gunner Integrated Protection and Restraint Systems (GIPRS/C																												
Individual Non-Lethal System																												
Small Business Innovation Research (SBIR) Enhancements																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Legacy Weapon Improvements																												
AMMUNITION																												
XM1112 Airburst Non-Lethal Munition (ANLM)																												
Ammunition Upgrades																												
COMBAT OPTICS																												
Optic Upgrades																												
Next Generation Optics																												
RESEARCH AND ANALYSIS																												
Research and Analysis																												
AT4 - TANDEM WARHEAD																												
DOTC Contract Award																												
Preliminary Design Review																												
Detailed Design Effort																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) EW4 / Crew Served Weapons Engineering Development	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Critical Design Review									3																			
Qualification Hardware Build																												
Test Readiness Review																												
Qualification Test																												
Product Improvement/ECP																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) EW4 / <i>Crew Served Weapons Engineering Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NEW WEAPON SYSTEMS	1	2017	4	2024
Next Generation Squad Weapon-Automatic Rifle	1	2019	4	2019
M3/M3E1 Multi-Role Anti-Armor Anti-Personnel Weapon System (MAAWS)	1	2017	4	2021
Precision Sniper Rifle (PSR)	1	2017	4	2020
New Weapon Systems Evaluations and Assessments	1	2018	4	2024
CREW SERVED WEAPON ENHANCEMENTS	1	2017	4	2024
Compact Semi-Automatic Sniper System (CSASS)	1	2017	4	2019
Increased Barrel Life/Replace Chrome	1	2019	4	2020
M2 Lightweight Program	1	2018	4	2020
Weapons Upgrades and Accessories	1	2017	4	2019
Gunner Integrated Protection and Restraint Systems (GIPRS/OGPK)	1	2017	4	2023
Individual Non-Lethal System	1	2021	4	2024
Small Business Innovation Research (SBIR) Enhancements	1	2017	4	2024
Legacy Weapon Improvements	1	2020	4	2024
AMMUNITION	1	2017	4	2024
XM1112 Airburst Non-Lethal Munition (ANLM)	1	2017	4	2020
Ammunition Upgrades	1	2017	4	2024
COMBAT OPTICS	1	2017	4	2024
Optic Upgrades	1	2017	4	2022
Next Generation Optics	1	2020	4	2024
FIRE CONTROL	1	2017	4	2017
Advanced Fire Control with Hyperspectral Target	1	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019	
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) EW4 / Crew Served Weapons Engineering Development	
	Start		End	
Events	Quarter	Year	Quarter	Year
Advanced Fire Control with Precision Projectile/Dynamic	1	2017	4	2017
Fire Control Upgrades	1	2017	4	2017
RESEARCH AND ANALYSIS	1	2017	4	2024
Research and Analysis	1	2017	4	2024
AT4 - TANDEM WARHEAD	3	2019	4	2020
DOTC Contract Award	3	2019	3	2019
Preliminary Design Review	4	2019	4	2019
Detailed Design Effort	4	2019	4	2020
Critical Design Review	2	2020	2	2020
Qualification Hardware Build	2	2020	3	2020
Test Readiness Review	3	2020	3	2020
Qualification Test	3	2020	3	2020
Product Improvement/ECP	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
FF2: <i>Small Arms Fire Control</i>	-	17.914	10.188	21.463	-	21.463	10.163	11.254	8.000	10.000	0.000	88.982
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Small Arms Fire Control - Squad and Crew are now referred to as Next Generation Fire Control (NGFC). This program Supports the Cross Functional Team (CFT).

A. Mission Description and Budget Item Justification

Small Arms Fire Control (SAFC) is a requirement for optimized fire control devices with improved Size Weight and Power (SWAP) to support Squad (S), Crew Served (CS) and Precision (P) and hand held devices. SAFC shall increase the probability of hit and decrease time to engage across a range of small arms weapon systems, with a direct-view optic that allows for quicker and more accurate target detection and recognition. The SAFC will utilize an open system of systems architecture comprised of modular components, to deliver to current ground forces the initial increased core capability followed by increasing increments of capability/enhancements over time as technology matures and evolves. Small Arms Fire Control will culminate in multiple configurations to include but not limited to Small Arms Fire Control - Squad (SAFC-S), Small Arms Fire Control - Crew Served (SAFC-CS), Small Arms Fire Control - Precision (SAFC-P), as well as enhancements. They may include technology such as variable magnification direct view (day) optics, atmospheric sensors, an overlaid digital display, weapon orientation sensors, range determination, ballistic computer, disturbed reticle, and networked lethality.

FY2020 RDT&E funding in the amount of \$21.463 million will support integration, manufacture, and testing of Next Generation Fire Control technologies and continue the Engineering and Manufacturing Development (EMD) Phases for all EMD ready Fire Control configurations and other associated fire control efforts. FY2020 funding will be focused on bid sample contract awards, down selection, design/prototyping, developmental and initial operational testing and evaluation.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Design, Develop and Fabricate	9.412	8.051	14.401	-	14.401
Description: Includes contract awards for the Engineering and Manufacturing Development of all Fire Control configurations, enhancements, and hand held devices.					
FY 2019 Plans: Will continue development and integration of various Fire Control configurations and transition NGFC variant, to conduct functional reviews and implement alternation plans for initial prototypes. Will award EMD Phase contracts NGFC and enhancements.					
FY 2020 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army				Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) FF2 / Small Arms Fire Control		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Will continue development and integration of all EMD ready Fire Control configurations, conduct functional reviews and implement alternation plans for initial prototypes. Will award EMD Phase contracts.						
FY 2019 to FY 2020 Increase/Decrease Statement: Funded amount of contract increases for EMD contract award.						
Title: Engineering Support		3.330	0.260	1.480	-	1.480
Description: Government engineering support, providing oversight of design development, integration and contractor performance at labs/centers and government facilities.						
FY 2019 Plans: Will provide systems engineering support and oversight of design improvements and contractor performance. Will complete developmental and operational test plans, source selection plan and evaluation criteria.						
FY 2020 Base Plans: Will continue to provide engineering support and oversight of design improvements and contractor performance. Will provide oversight of developmental and operational test activities, preliminary and critical design reviews. Will participate in source selection activities and technical reviews.						
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increase is due to additional funds required for preliminary and critical design reviews.						
Title: Test and Evaluation		3.391	0.743	4.122	-	4.122
Description: Government testing and evaluation of Commercial Off The Shelf / Non-Developmental Item (COTS/NDI) items, prototypes, articles and improvements.						
FY 2019 Plans: Will complete bid sample testing and conduct developmental and operational test activities for small arms fire control variants. Will conduct preliminary and critical design reviews. Will continue to assess and evaluate incorporating existing target acquisition/fire control component technologies into binoculars.						
FY 2020 Base Plans: Prototype systems will be tested both for technical capability as well as user evaluation. Will develop test and evaluation criteria, test and evaluate improvements of prototypes and document all results.						
FY 2019 to FY 2020 Increase/Decrease Statement:						

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army				Date: March 2019	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY 2020 increase is due to additional funds required for technical testing and user evaluations.					
Title: Program Management Description: Program management office, providing oversight of contract actions, engineering support and test activities. FY 2019 Plans: Provides Program Management (PM) non-labor operations. FY 2020 Base Plans: Will provide program oversight of design, development, integration and testing, to include contract actions, engineering support and test activities throughout the fiscal year. FY 2019 to FY 2020 Increase/Decrease Statement: FY2020 increase due to other fire control efforts requiring additional program management support.	1.781	0.440	1.460	-	1.460
Title: FY2019 SBIR / STTR Transfer FY 2019 Plans: FY2019 SBIR / STTR Transfer FY 2019 to FY 2020 Increase/Decrease Statement: FY2019 SBIR / STTR Transfer	-	0.694	-	-	-
Accomplishments/Planned Programs Subtotals	17.914	10.188	21.463	-	21.463

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	27.832	7.677	14.555	-	14.555	16.097	19.232	17.439	10.487	0.000	113.319
• G17200: <i>Small Arms - Fire Control</i>	-	-	8.060	-	8.060	12.230	27.060	59.020	66.410	Continuing	Continuing
Remarks Small Arms Fire Control was previously funded on Program Element 0604601A Infantry Support Weapons, under Projects S63 and EW4.											
D. Acquisition Strategy The Small Arms Fire Control (SAFC) projects will use an incremental developmental acquisition strategy.											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>
<p>The Small Arms Fire Control - Squad (SAFC-S) also known as Next Generation Fire Control (NGFC) plans to award Engineering and Manufacturing Development contract(s) in FY2019. Iterative prototyping will be used to gather both technical and user feedback, and continuous technical improvements will be made on the system design. Based on test data and soldier touch points, an LRIP production option will be awarded in FY2020 followed by FRP FY2021. Total Army Procurement Objective (APO) for the SAFC-S is 188,698 systems.</p> <p>Additional Small Arms Fire Control Projects: Other associated Fire Controls will be tested and evaluated simultaneously.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FF2 / Small Arms Fire Control					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	-	-		0.694	Nov 2018	-		-		-	0.000	0.694	-
Subtotal			-	-		0.694		-		-		-	0.000	0.694	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering & Manufacturing Development Contract - Precision Fire Control	C/FFP	TBD : TBD	-	6.712	Mar 2019	-		6.236	Dec 2019	-		6.236	Continuing	Continuing	-
Engineering & Manufacturing Development Contract #1 - Crew Served Fire Control	C/FFP	TBD : TBD	-	0.600	Aug 2018	-		-		-		-	Continuing	Continuing	-
Engineering & Manufacturing Development Contract #2 - Crew Served Fire Control	C/FFP	TBD : TBD	-	0.600	Aug 2018	-		-		-		-	Continuing	Continuing	-
Engineering & Manufacturing Development Contract #3 - Other	C/FFP	TBD : TBD	-	1.500	Mar 2019	1.051	Feb 2019	2.600	Feb 2020	-		2.600	Continuing	Continuing	-
Engineering & Manufacturing Development Contract #4- Squad Fire Control	C/FFP	TBD : TBD	-	-		7.000	Aug 2019	5.565	Nov 2019	-		5.565	Continuing	Continuing	-
Subtotal			-	9.412		8.051		14.401		-		14.401	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FF2 / Small Arms Fire Control					
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	MIPR	US Army Armament Research, Development and Engineering Center (ARDEC) : Picatinny Arsenal, NJ	-	3.330	Oct 2017	0.440	Oct 2018	1.480	Nov 2019	-		1.480	Continuing	Continuing	-
Program Management (Non-Labor)	Allot	Project Manager Soldier Weapons (PMSW) /Non-Labor : Picatinny Arsenal, NJ	-	0.591	Oct 2017	0.140	Oct 2018	0.652	Nov 2019	-		0.652	Continuing	Continuing	-
Contractor Support	C/FFP	TBD : TBD	-	0.590	Oct 2017	0.120	Nov 2018	0.553	Nov 2019	-		0.553	Continuing	Continuing	-
Logistical Management	MIPR	US Army Tank & Automotive Command (TACOM) : Warren, MI	-	0.600	Oct 2017	-		0.255	Dec 2019	-		0.255	Continuing	Continuing	-
Subtotal			-	5.111		0.700		2.940		-		2.940	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	MIPR	US Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	-	1.418	Apr 2019	0.743	Nov 2018	1.720	Mar 2020	-		1.720	Continuing	Continuing	-
Test and Evaluation	MIPR	US Army Research Laboratory : Aberdeen Proving Ground, MD	-	0.650	May 2019	-		0.856	Feb 2020	-		0.856	Continuing	Continuing	-
Test and Evaluation	MIPR	Maneuver Battle Lab, US Army Maneuver Center	-	0.600	May 2019	-		0.726	Feb 2020	-		0.726	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FF2 / Small Arms Fire Control					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
		of Excellence : FT Benning, GA													
Test and Evaluation	MIPR	White Sands Missile Range : White Sands Missile Range, NM	-	0.723	May 2019	-		0.820	Mar 2020	-		0.820	Continuing	Continuing	-
Subtotal			-	3.391		0.743		4.122		-		4.122	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	17.914		10.188		21.463		-		21.463	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army **Date:** March 2019

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>
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Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Engineering & Manufacturing Development - SAFC- Precision																												
Contract Award -Next Generation Fire Control (NGFC)																												
Engineering & Manufacturing Development - NGFC																												
Production Decision - NGFC																												
Contract Award Phase II - NGFC																												
Engineering & Manufacturing Development -Phase II NGFC																												
Additional Small Arms Fire Control Projects																												
Test and Evaluation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FF2 / <i>Small Arms Fire Control</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering & Manufacturing Development - SAFC- Precision	1	2020	2	2021
Contract Award -Next Generation Fire Control (NGFC)	2	2019	2	2019
Engineering & Manufacturing Development - NGFC	3	2019	4	2020
Production Decision - NGFC	4	2020	4	2020
Contract Award Phase II - NGFC	4	2021	4	2021
Engineering & Manufacturing Development -Phase II NGFC	4	2021	3	2023
Additional Small Arms Fire Control Projects	1	2018	4	2024
Test and Evaluation	1	2018	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FI2 / Lightweight 30mm Cannon			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
FI2: <i>Lightweight 30mm Cannon</i>	-	8.280	0.000	1.384	-	1.384	0.000	0.000	0.000	0.000	0.000	9.664
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In support of an Army Joint Urgent Operational Need Statement (JUONS) CC-0558 to provide an increased lethality modification for Product Directorate Counter Rocket Artillery Mortars (PD C-RAM) and any future requirement that requires 30mm increased lethality.

The XM914 is an upgraded and modified version of the M230 cannon currently equipped on the AH-64 Apache advanced attack helicopter. The XM914 is a link fed, externally powered and electrically primed 30mm chain gun, capable of firing two hundred rounds per minute. The gun incorporates an anti-hangfire system and an extended barrel for enhanced muzzle velocity. The XM914 provides significant lethality improvements over the current M2 .50 caliber machine gun and MK19 grenade machine gun and provides the capability required for Soldiers in a combat environment to engage enemy personnel and light armored targets.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Contractor Design and Prototype Fabrication Description: Includes contractor design, development and prototype fabrication for engineering and manufacturing development of the XM914 30mm autocannon. FY 2020 Base Plans: Contractor will continue to develop and fabricate modifications and prototypes for engineering and manufacturing development of the XM914 30mm autocannon. FY 2019 to FY 2020 Increase/Decrease Statement: Increase in contractor design and prototype fabrication for continued modification of the XM914 for ground combat application.	5.200	-	0.859	-	0.859
Title: Engineering Support Description: Government engineering support at lab/center, providing design, limited testing and oversight of development and contractor performance. FY 2020 Base Plans: Government engineering support will continue to provide oversight of modifications, development and contractor performance. FY 2019 to FY 2020 Increase/Decrease Statement:	1.350	-	0.400	-	0.400

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army								Date: March 2019			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FI2 / Lightweight 30mm Cannon			
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Increase in government engineering support for continued modification of the XM914 for ground combat application.											
Title: Test and Evaluation Description: Government testing and evaluation of weapon prototype, articles and system improvements. FY 2020 Base Plans: Government will continue to test and evaluation modifications, prototypes, test articles and system improvements. FY 2019 to FY 2020 Increase/Decrease Statement: Increase in government test and evaluation support for continued modification of the XM914 for ground combat application.						1.650	-	0.100	-	0.100	
Title: Program Management Description: Program management office provides oversight of contract actions, engineering support and test activities. FY 2020 Base Plans: Program management office will continue to provide oversight of contractor development and fabrication, engineering support at government facilities, and test and evaluation of system modifications and improvements. FY 2019 to FY 2020 Increase/Decrease Statement: Increase in program management support for continued modification of the XM914 for ground combat application.						0.080	-	0.025	-	0.025	
Accomplishments/Planned Programs Subtotals						8.280	-	1.384	-	1.384	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• G13800: GUN AUTOMATIC 30MM M230	-	-	20.000	-	20.000	10.000	-	-	-	0.000	30.000
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FI2 / <i>Lightweight 30mm Cannon</i>
<u>D. Acquisition Strategy</u> <p>The M230LF is currently considered a non-standard weapon that is being sold commercially to foreign customers by the vendor. As a modified version of the M230 30mm chain gun for the AH-64 Apache advanced attack helicopter, the government model requires safety confirmation/safety release and weapon qualification for vehicle mounted platforms. A long term Indefinite Delivery/Indefinite Quantity (IDIQ) type contract will be pursued once a production requirement is finalized.</p> <p>The program supports new and emerging urgent requirements and will support integration with ground vehicle platforms.</p> <u>E. Performance Metrics</u> N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FI2 / Lightweight 30mm Cannon					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	MIPR	PM Soldier Weapons : Picatinny Arsenal, NJ	-	0.080	May 2018	-		0.025	Oct 2019	-		0.025	0.000	0.105	-
Subtotal			-	0.080		-		0.025		-		0.025	0.000	0.105	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Contractor Design and Prototype Fabrication	SS/FFP	Northrop Grumman : Mesa, AZ	-	5.200	Jul 2018	-		0.859	Nov 2019	-		0.859	0.000	6.059	-
Subtotal			-	5.200		-		0.859		-		0.859	0.000	6.059	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	MIPR	Multiple Other Government Agencies : Multiple	-	1.350	May 2018	-		0.400	Oct 2019	-		0.400	0.000	1.750	-
Subtotal			-	1.350		-		0.400		-		0.400	0.000	1.750	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	-	1.650	Aug 2018	-		0.100	Dec 2019	-		0.100	0.000	1.750	-
Subtotal			-	1.650		-		0.100		-		0.100	0.000	1.750	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army										Date: March 2019				
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FI2 / Lightweight 30mm Cannon					
		Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	8.280		0.000		1.384		-		1.384	0.000	9.664	N/A
Remarks														

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) FI2 / Lightweight 30mm Cannon	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Contractor Design and Prototype Fabrication (Phase I)																												
Engineering Support (Phase I)																												
Test and Evaluation (Phase I)																												
Program Management (Phase I)																												
Contractor Design and Prototype Fabrication (Phase II)																												
Engineering Support (Phase II)																												
Test and Evaluation (Phase II)																												
Program Management (Phase II)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FI2 / <i>Lightweight 30mm Cannon</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Contractor Design and Prototype Fabrication (Phase I)	1	2018	4	2018
Engineering Support (Phase I)	1	2018	4	2018
Test and Evaluation (Phase I)	1	2018	4	2018
Program Management (Phase I)	1	2018	4	2018
Contractor Design and Prototype Fabrication (Phase II)	1	2020	4	2020
Engineering Support (Phase II)	1	2020	4	2020
Test and Evaluation (Phase II)	1	2020	4	2020
Program Management (Phase II)	1	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FL8 / 84mm MAAWS Ammunition			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
FL8: 84mm MAAWS Ammunition	-	0.000	0.000	4.040	-	4.040	3.134	3.000	0.000	0.000	0.000	10.174
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This effort transitions from Project EW4 to Project FL8 in FY 2020.

A. Mission Description and Budget Item Justification

This project will test, evaluate and qualify up to seven (7) types of 84mm munitions for U.S. Army use with the M3/M3A1 Multi-Role Anti-Armor Anti-Personnel Weapon Systems (MAAWS). In addition to type classifying existing rounds, funds will also provide for the evaluation and qualification of the new High Explosive Programmable Airbursting Round. These rounds will provide improved lethality and a higher probability of hit in defilade positions for close combat forces against varying target sets and increased ranges in support of Infantry Squad formations. The M3/M3A1 is a HQDA G8 directed requirement scheduled for Full Material Release 4Qtr FY 2021.

FY 2020 funding in the amount of \$4.040 million will be used to acquire prototypes and support test and evaluation efforts for the new programmable round.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<i>Title:</i> Munition Prototype Development & Demonstration	-	-	3.040	-	3.040
<i>Description:</i> Includes ammunition engineering and manufacturing, contract awards for prototypes, development and demonstration.					
<i>FY 2020 Base Plans:</i> Contract award will begin the development of the programmable round. Initial prototypes will be delivered, functional and critical design reviews will be conducted.					
<i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> This effort transitions from Project EW4 to Project FL8 in FY 2020.					
<i>Title:</i> Engineering Support	-	-	0.320	-	0.320
<i>Description:</i> Government engineering support, providing oversight of design development and contractor performance.					
<i>FY 2020 Base Plans:</i>					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) FL8 / 84mm MAAWS Ammunition				
B. Accomplishments/Planned Programs (\$ in Millions)												
								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Provides engineering support and oversight of ammunition design and function. Participate in Integrated Product Team (IPT) and technical reviews.												
<i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> This effort transitions from Project EW4 to Project FL8 in FY 2020.												
<i>Title:</i> Test and Evaluation								-	-	0.110	-	0.110
<i>FY 2020 Base Plans:</i> Develop test and evaluation master plan to evaluate and analyze the effect of Commercial Off The Shelf (COTS) 84mm programmable round for type classification.												
<i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> This effort transitions from Project EW4 to Project FL8 in FY 2020.												
<i>Title:</i> Program Management								-	-	0.570	-	0.570
<i>FY 2020 Base Plans:</i> Provides for project oversight, program management, non-labor operations, and contractor support.												
<i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> This effort transitions from Project EW4 to Project FL8 in FY 2020.												
Accomplishments/Planned Programs Subtotals								-	-	4.040	-	4.040
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
• EW4: <i>Crew Served Weapons Engineering Development</i>	12.999	11.102	2.589	-	2.589	15.767	14.789	13.927	9.029	0.000	80.202	
• G13101: <i>MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM</i>	26.520	19.880	19.420	2.400	21.820	20.282	26.716	26.035	0.866	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
Will use Other Transaction Authority (OTA) via the DoD Ordnance Technology Consortium (DOTC) to obtain commercially available 84mm ammunition for test and evaluation purposes. A long term Indefinite Delivery/Indefinite Quantity (IDIQ) type contract will be pursued for follow on orders.												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FL8 / 84mm MAAWS Ammunition					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	MIPR	PMSW : Picatinny Arsenal, NJ	-	-		-		0.570	Oct 2019	-		0.570	0.000	0.570	Continuing
Subtotal			-	-		-		0.570		-		0.570	0.000	0.570	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Munitions Prototype	SS/CPFF	SAAB : Sweden	-	-		-		3.040	Nov 2019	-		3.040	0.000	3.040	Continuing
Subtotal			-	-		-		3.040		-		3.040	0.000	3.040	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	MIPR	ARDEC : Picatinny Arsenal, NJ	-	-		-		0.320	Nov 2019	-		0.320	0.000	0.320	Continuing
Subtotal			-	-		-		0.320		-		0.320	0.000	0.320	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 & Evaluation	MIPR	ATEC : Aberdeen, MD	-	-		-		0.110	Aug 2020	-		0.110	0.000	0.110	Continuing
Subtotal			-	-		-		0.110		-		0.110	0.000	0.110	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		4.040		-		4.040	0.000	4.040	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army							Date: March 2019			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) FL8 / 84mm MAAWS Ammunition				
	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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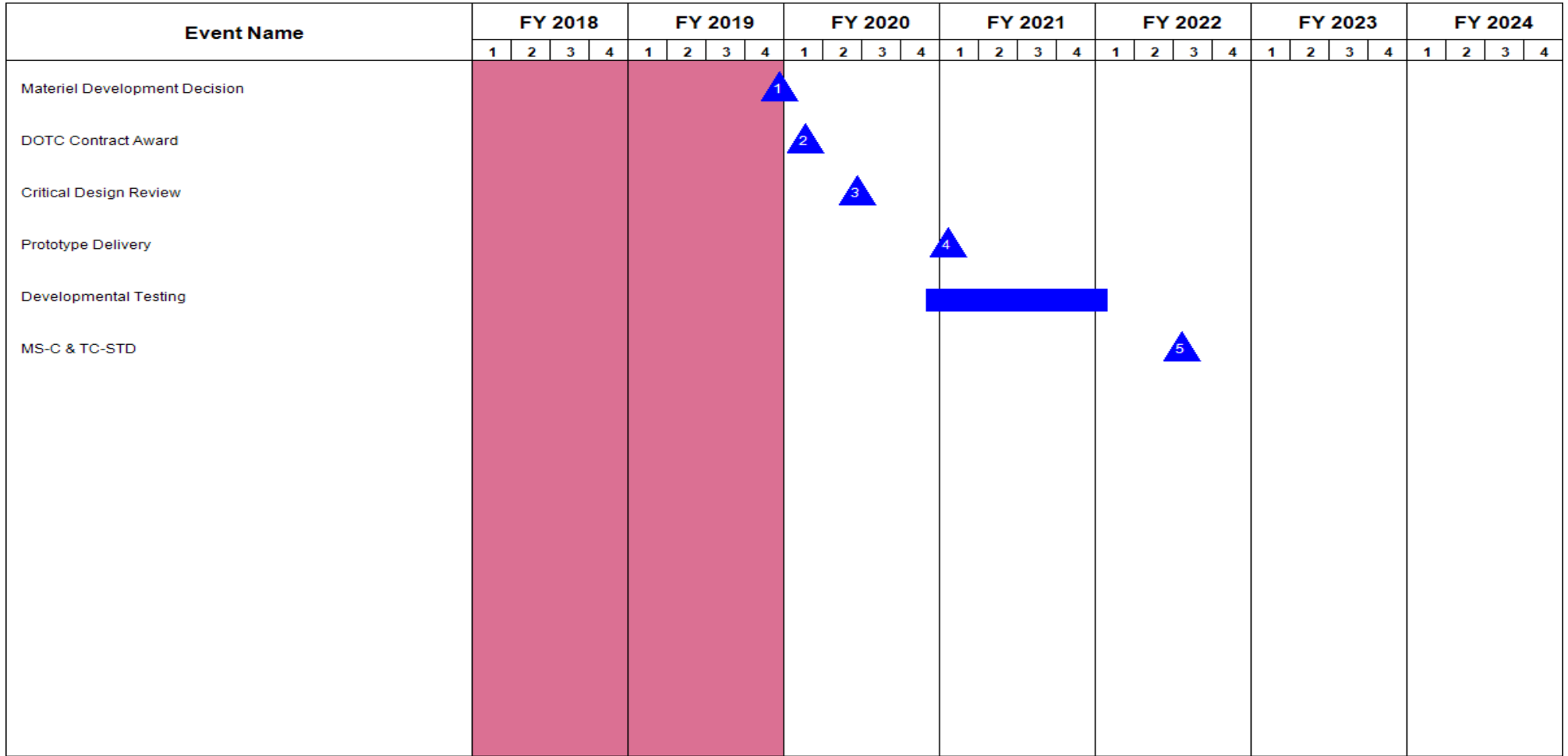
Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army

Date: March 2019

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604601A / Infantry Support Weapons

Project (Number/Name)
FL8 / 84mm MAAWS Ammunition



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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) FL8 / <i>84mm MAAWS Ammunition</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision	4	2019	4	2019
DOTC Contract Award	1	2020	1	2020
Critical Design Review	2	2020	2	2020
Prototype Delivery	1	2021	1	2021
Developmental Testing	4	2020	1	2022
MS-C & TC-STD	3	2022	3	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
FM4: <i>Next Generation Squad Weapons</i>	-	0.000	0.000	33.080	-	33.080	36.880	13.780	15.470	16.060	0.000	115.270
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding line established in FY 2020 for the Next Generation Squad Weapons. Efforts were previously executed in Program Elements 0603827A S54/Small Arms Improvement, 0604601A EW4/Crew Served Weapons Engineering Development and S63/Individual Weapons Engineering Development. This program Supports the Cross Functional Team (CFT).

A. Mission Description and Budget Item Justification

The Next Generation Squad Weapon (NGSW) program will develop weapon systems to maintain overmatch and meet future force warfighter needs.

The Next Generation Squad Weapon-Rifle (NGSW-R) is one variant of the Next Generation Squad Weapons. It is the planned replacement for the M4A1 Carbine and M16A2 Rifle in Close Combat Force and select support units during the next decade. The NGSW-R will provide capability improvements in accuracy, range, and lethality.

The Next Generation Squad Weapon-Automatic Rifle (NGSW-AR) is another variant of Next Generation Squad Weapons. It is the planned replacement for the M249 Squad Automatic Weapon (SAW) in Close Combat Force and select support units during the next decade. The NGSW-AR combines the firepower and range of a machine gun with the precision and ergonomics of a carbine, yielding capability improvements in accuracy, range, and lethality.

Development efforts for additional NGSW variants may follow to replace other legacy systems or provide additional enhanced capabilities.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Contractor Design and Prototype Fabrication	-	-	26.348	-	26.348
Description: Contractor design, development and fabrication of prototypes.					
FY 2020 Base Plans: Includes contractor design, development and prototype fabrication for engineering and manufacturing development of the Next Generation Squad Weapons (NGSW). NGSW will interface with Squad Fire Control, Family of Weapon Sights - Individual, and other enablers. Up to three contractors will be delivering					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons	Project (Number/Name) FM4 / Next Generation Squad Weapons				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
approximately 45 automatic prototype rifles, 24 prototype rifles and associated ammunition for Government testing. FY 2019 to FY 2020 Increase/Decrease Statement: Efforts were previously executed in Program Elements 0603827A S54/Small Arms Improvement, 0604601A EW4/Crew Served Weapons Engineering Development and S63/Individual Weapons Engineering Development.						
Title: Engineering Support Description: Government engineering support, providing oversight of design, development and contractor performance. FY 2020 Base Plans: Government engineering support at lab/center, providing design, limited testing and oversight of development and contractor performance. FY 2019 to FY 2020 Increase/Decrease Statement: Efforts were previously executed in Program Elements 0603827A S54/Small Arms Improvement, 0604601A EW4/Crew Served Weapons Engineering Development and S63/Individual Weapons Engineering Development.		-	-	3.652	-	3.652
Title: Test and Evaluation Description: Testing and evaluation at government ranges and facilities. FY 2020 Base Plans: Government testing and evaluation of weapon prototype, articles and system improvements. FY 2019 to FY 2020 Increase/Decrease Statement: Efforts were previously executed in Program Elements 0603827A S54/Small Arms Improvement, 0604601A EW4/Crew Served Weapons Engineering Development and S63/Individual Weapons Engineering Development.		-	-	2.830	-	2.830
Title: Program Management Description: Program office management and oversight of government and contractor efforts. FY 2020 Base Plans: Program management office provides oversight of contract actions, engineering support and test activities. FY 2019 to FY 2020 Increase/Decrease Statement:		-	-	0.250	-	0.250

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) FM4 / <i>Next Generation Squad Weapons</i>			
B. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total			
Efforts were previously executed in Program Elements 0603827A S54/Small Arms Improvement, 0604601A EW4/Crew Served Weapons Engineering Development and S63/Individual Weapons Engineering Development.											
Accomplishments/Planned Programs Subtotals				-	-	33.080	-	33.080			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• S54: <i>Small Arms Improvement</i>	27.832	7.677	14.555	-	14.555	16.097	19.232	17.439	10.487	0.000	113.319
• EW4: <i>Crew Served Weapons Engineering Development</i>	12.999	11.102	2.589	-	2.589	15.767	14.789	13.927	9.029	0.000	80.202
• S63: <i>Individual Weapons Engineering Development</i>	9.664	5.749	7.076	-	7.076	15.377	7.918	6.284	0.974	0.000	53.042
• FL4: <i>Small Caliber Ammo for Next Gen Squad Weapons</i>	-	-	22.880	-	22.880	30.630	28.750	25.000	11.750	0.000	119.010
• EP5: <i>Adv Armor-Piercing (ADVAP) for Small Caliber Ammo</i>	13.318	16.748	0.000	-	0.000	-	-	-	-	0.000	30.066
Remarks											
D. Acquisition Strategy											
The Next Generation Squad Weapons program will utilize competitively awarded development contracts to mature and finalize system designs and conduct test and evaluations resulting in follow on production contract awards.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FM4 / Next Generation Squad Weapons					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	Allot	PM Soldier Weapons : Picatinny Arsenal, NJ	-	-		-		0.250	Oct 2019	-		0.250	0.000	0.250	-
Subtotal			-	-		-		0.250		-		0.250	0.000	0.250	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Prototype Opportunity Notice	C/Various	VENDOR 1 : NJ	-	-		-		8.782	Jan 2020	-		8.782	0.000	8.782	-
Prototype Opportunity Notice	C/Various	VENDOR 2 : NJ	-	-		-		8.782	Jan 2020	-		8.782	0.000	8.782	-
Prototype Opportunity Notice	C/Various	VENDOR 3 : NJ	-	-		-		8.782	Jan 2020	-		8.782	0.000	8.782	-
Subtotal			-	-		-		26.346		-		26.346	0.000	26.346	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	MIPR	US Army Armament Research, Development and Engineering Center (ARDEC) : Picatinny Arsneal, NJ	-	-		-		3.654	Oct 2019	-		3.654	0.000	3.654	-
Subtotal			-	-		-		3.654		-		3.654	0.000	3.654	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) FM4 / Next Generation Squad Weapons					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, ND	-	-		-		2.830	Apr 2020	-		2.830	0.000	2.830	-
Subtotal			-	-		-		2.830		-		2.830	0.000	2.830	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		33.080		-		33.080	0.000	33.080	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army										Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)			
2040 / 5					PE 0604601A / Infantry Support Weapons					FM4 / Next Generation Squad Weapons			

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				
	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	
Prototype Opportunity Notice																													
Contractor Design and Prototype Fabrication																													
Engineering Support																													
Test and Evaluation																													

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons	Project (Number/Name) FM4 / Next Generation Squad Weapons

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Prototype Opportunity Notice	2	2019	2	2019
Contractor Design and Prototype Fabrication	2	2020	4	2024
Engineering Support	1	2020	4	2024
Test and Evaluation	3	2020	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S58 / Soldier Enhancement Program			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S58: Soldier Enhancement Program	-	6.232	9.081	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.313
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Description: The Soldier Enhancement Program (SEP) was established in the Fiscal Year 1990 National Defense Authorization Act. SEP provides an innovative rapid approach that includes procurement and evaluation of Commercial Off the Shelf (COTS)/Non Developmental Item (NDI)/Government Off the Shelf (GOTS) items that have the potential to enhance an Army Infantryman and Soldiers' ability to execute their combat mission. SEP provides significant savings and acceleration in the evaluation of items. The SEP program is managed jointly by Program Executive Office (PEO) Soldier and the Maneuver Center of Excellence. SEP suggestions are submitted by individual Soldiers, Field Commanders, commercial manufacturers, and others via the PEO Soldier SEP website. Viable suggestions are vetted by a Council of Colonels (CoC) and validated as SEP initiatives by Department of the Army, Deputy Chief of Staff, G8, Force Development. A limited number of validated SEP initiatives are procured and evaluated by Soldiers for feasibility and suitability. Based on the evaluation findings, the SEP CoC provides one or more of the following courses of action: (1) inform deliberate or urgent/emerging requirements generation, (2) initiate a new Program of Record (POR), (3) improve an existing POR, (4) transition to the Rapid Equipping Force or (5) add to the Rapid Fielding Initiative list, (6) provide a national stock number (NSN) for unit procurement or (7) the item did not meet objectives and no further action is necessary.

Justification: No FY2020 funding requested.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Soldier Enhancement Program (SEP) Evaluations	5.700	8.477	-	-	-
Description: Procure and evaluate COTS/GOTS/NDI items that have the potential to enhance Soldier combat effectiveness.					
FY 2019 Plans: Funding supports evaluation of approximately 25-35 initiatives. Product evaluations includes safety testing, collection, and analysis of user feedback/results and documentation of results.					
FY 2019 to FY 2020 Increase/Decrease Statement: HQDA re-prioritization.					
Title: System Engineering/Program Management	0.532	0.512	-	-	-
Description: Systems Engineering and Program Management.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army							Date: March 2019				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>			Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
<i>FY 2019 Plans:</i> (1) Coordinate with industry and TRADOC to ensure submitted proposals satisfy Army needs, (2) evaluate SEP initiatives and provide recommendations, (3) conduct Council of Colonels and IPRs, (4) manage and distribute funding for SEP initiatives, and (5) upon conclusion of the evaluations, the SEP team reviews results and document the closeout.											
<i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> HQDA re-prioritization											
<i>Title:</i> FY2019 SBIR / STTR Transfer <i>Description:</i> FY2019 SBIR / STTR Transfer							-	0.092	-	-	-
<i>FY 2019 Plans:</i> FY2019 SBIR / STTR Transfer <i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> FY2019 SBIR / STTR Transfer											
Accomplishments/Planned Programs Subtotals							6.232	9.081	-	-	-
C. Other Program Funding Summary (\$ in Millions)											
			FY 2020	FY 2020	FY 2020					Cost To	
Line Item	FY 2018	FY 2019	Base	OCO	Total	FY 2021	FY 2022	FY 2023	FY 2024	Complete	Total Cost
• MA6800: <i>Soldier Enhancement</i>	1.095	1.103	0.000	-	0.000	-	-	-	-	0.000	2.198
• E99105: <i>Soldier Enhancement Program Ammo</i>	0.248	0.253	0.000	-	0.000	-	-	-	-	0.000	0.501
• GC0076: <i>Small Arms Equipment (Soldier Enh Prog)</i>	1.573	1.640	0.000	-	0.000	-	-	-	-	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
SEP focuses on COTS/GOTS/NDI initiatives submitted by Soldiers and industry. SEP proposals are reviewed and approved semiannually. Procurement funds SEP COTS/GOTS/NDI items in quantities sufficient for Soldier evaluation. Research, Development, Test and Evaluation is used to conduct product evaluations which includes safety testing, data collection, analysis of Soldier feedback/results and documentation of results. Product Managers responsible for portfolio in which the SEP											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
<p>initiative falls develops the procurement and evaluation strategy and procures the items using a variety of means from Government purchase card to full contracts. Soldiers evaluations are performed by various means from Battle Lab surveys to full scale Army Test and Evaluation testing depending on the item.</p> <p><u>E. Performance Metrics</u></p> <p>N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S58 / Soldier Enhancement Program					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Various	MIPR	PEO Soldier : Ft. Belvoir, VA	13.777	0.532	Dec 2017	0.512	Dec 2018	-		-		-	0.000	14.821	-
Subtotal			13.777	0.532		0.512		-		-		-	0.000	14.821	N/A
Remarks															
Systems Engineering and Program Management includes engineering support, conducting technical evaluations, market research and program reviews.															
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Various	MIPR	Various : Various	39.573	-		-		-		-		-	0.000	39.573	-
Subtotal			39.573	-		-		-		-		-	0.000	39.573	N/A
Remarks															
Candidates for the Soldier Enhancement Program are received, reviewed, and approved semi-annually. Contractual efforts are focused on procuring prototypes for testing.															
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Various	MIPR	PEO Soldier : Ft. Belvoir, VA	6.424	-		-		-		-		-	0.000	6.424	-
FY2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.092	Nov 2018	-		-		-	0.000	0.092	-
Subtotal			6.424	-		0.092		-		-		-	0.000	6.516	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Various	MIPR	Various : Various	43.360	5.700	Jan 2018	8.477	Jan 2019	-		-		-	0.000	57.537	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>				

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			43.360	5.700		8.477		-		-		-	0.000	57.537	N/A

Remarks Testing costs vary annually depending on number and type of items being evaluated.															
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	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	103.134	6.232		9.081		-		-		-	0.000	118.447	N/A

Remarks															
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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army	Date: March 2019
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>
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Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Evaluate Initiatives 1-2Q FY18																												
Test approved proposals																												
SEP Council of Colonel approval/prioritization process 2Q FY18		1																										
Approval/prioritization of SEP Proposals																												
Evaluate Initiatives 3-4Q FY18																												
Test approved proposals																												
SEP Council of Colonel approval/prioritization process 4QFY18			2																									
Approval/prioritization of SEP Proposals																												
Evaluate Initiatives 1-2Q FY19																												
Test approved proposals																												
SEP Council of Colonel approval/prioritization process 2Q FY19							3																					
Approval/prioritization of SEP Proposals																												
Evaluate Initiatives 3-4Q FY19																												
Test approved proposals																												
SEP Council of Colonel approval/prioritization process 4QFY19								4																				
Approval/prioritization of SEP Proposals																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S58 / <i>Soldier Enhancement Program</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evaluate Initiatives 3-4Q FY15	3	2015	4	2015
Evaluate Initiatives 1-2Q FY16	1	2016	2	2016
Evaluate Initiatives 1-2Q FY17	1	2017	2	2017
Evaluate Initiatives 3-4Q FY17	3	2017	4	2017
Evaluate Initiatives 1-2Q FY18	1	2018	2	2018
SEP Council of Colonel approval/prioritization process 2Q FY18	2	2018	2	2018
Evaluate Initiatives 3-4Q FY18	3	2018	4	2018
SEP Council of Colonel approval/prioritization process 4QFY18	4	2018	4	2018
Evaluate Initiatives 1-2Q FY19	1	2019	2	2019
SEP Council of Colonel approval/prioritization process 2Q FY19	2	2019	2	2019
Evaluate Initiatives 3-4Q FY19	3	2019	4	2019
SEP Council of Colonel approval/prioritization process 4QFY19	4	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S60 / Clothing & Equipment			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S60: Clothing & Equipment	-	6.780	8.348	6.453	-	6.453	6.724	5.015	4.850	3.700	0.000	41.870
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports engineering and manufacturing development tasks related to individual clothing and equipment with the goal of enhancing the lethality survivability, and mobility as well as the quality of life of the individual Soldier. It funds formal Developmental Testing/Operational Testing of preproduction and production representative systems leveraging advancements in materials, fabrication techniques, moisture management, flame resistant, insect protection, extreme environmental protection and camouflage, to include evaluation, test, and conduct of Soldier evaluations of Organizational Clothing and Individual Equipment appropriate for use in extreme or multi-climate environments; not to be precluded other climates and environments. Goal is to increase the capabilities and durability of tactical and non-tactical clothing and individual equipment. Includes integration and interface on the Soldier system.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Soldier Uniforms and Clothing	5.526	4.522	5.162	-	5.162
Description: Evaluate superior and sustainable integrated clothing for the Soldier in a rapidly changing global environment.					
FY 2019 Plans: Conduct user evaluation on environmental protective handwear for use in varying weather environments (i.e. extreme cold weather, cold weather, etc). Continue modifications to support improved protection against insects and flame while increasing moisture management, signature management, breathability, and durability for tactical clothing. Continue to provide evaluation support of commercial offerings against the military product description for the athletic shoe in support of the Department of Defense and Congressional direction. Conduct flame testing on all FR clothing items using testing methodology transitioning from Science and Technology (S&T) community. Conduct a LUE on the Army Greens Service Uniform. Continue to conduct Cold Weather Combat Boot testing and complete MS C.					
FY 2020 Base Plans: Continue fabric and FR upgrades that support improved protection against insects and flame while increasing moisture management, signature management, breathability, and durability for tactical clothing. Continue Clothing Bag upgrades and evaluations. Conduct Modular Cold / Extreme Glove System MS C. Conduct sizing and body scanning study. Cold Weather Combat boot source selection verification testing.					
FY 2019 to FY 2020 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army								Date: March 2019			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S60 / Clothing & Equipment			
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Funding increase in Soldier Uniforms and Clothing portfolio is due to anticipated requirement changes in FY 2020.											
Title: Individual Equipment						1.254	3.826	1.291	-	1.291	
Description: Develop and provide superior and sustainable integrated individual equipment for the Soldier in a rapidly changing global environment.											
FY 2019 Plans: Procure assets and conduct limited user evaluation on government designed Modular Handgun System Holster. Test methodology provides three dimensional anthropometrically correct instruments for testing in flame environment. Perform safe to fly testing on Advanced Tactical Assault Panel. Test increased capacity capability for Multi-Purpose Hydration System (MPHS). Procure test assets, complete a user evaluation and then go out on contract for Improved Ghillie System (IGS) systems based on user eval and benchtop testing. Procure enough via contract to complete Initial operating capacity (IOC) and Full operating capacity (FOC).											
FY 2020 Base Plans: Continue on-the-move Hydration Operational Life Testing (TIC/TIM/Desalinization). Complete development of increased capacity Multi-Purpose Hydration System (MPHS). Begin testing on Cold Weather Mobility items (i.e. skis, accessories, snow shoes, etc.). The parachutist flotation device MS C is schedule for 2Q FY20.											
FY 2019 to FY 2020 Increase/Decrease Statement: Funding change in Individual Equipment portfolio is due to anticipated requirement changes in FY 2019 and FY 2020.Increase by \$2.797M											
Accomplishments/Planned Programs Subtotals						6.780	8.348	6.453	-	6.453	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• S53: Clothing And Equipment	2.532	1.823	2.466	-	2.466	1.810	2.416	4.478	5.078	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) Traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of complexity and testing required.											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>
<div>E. Performance Metrics</div> <div>N/A</div>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S60 / Clothing & Equipment					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management Support	Allot	PM SCIE : Ft Belvoir	9.702	0.703		0.718		0.827		-		0.827	Continuing	Continuing	Continuing
Subtotal			9.702	0.703		0.718		0.827		-		0.827	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	Various	NSRDEC : Natick, MA	16.285	0.500		-		0.589		-		0.589	Continuing	Continuing	Continuing
Development Contracts	Various	Various : Various	46.133	2.503		3.087		2.683		-		2.683	Continuing	Continuing	Continuing
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.196		-		-		-	0.000	0.196	-
Subtotal			62.418	3.003		3.283		3.272		-		3.272	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Misc Support Costs	Various	Natick, MA : Natick, MA	16.486	0.400		1.624		0.476		-		0.476	Continuing	Continuing	Continuing
Subtotal			16.486	0.400		1.624		0.476		-		0.476	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Developmental Testing	MIPR	Various : Various	25.527	2.674		2.723		1.878		-		1.878	Continuing	Continuing	Continuing
Subtotal			25.527	2.674		2.723		1.878		-		1.878	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army										Date: March 2019					
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons					Project (Number/Name) S60 / Clothing & Equipment					
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			114.133	6.780		8.348		6.453		-		6.453	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army

Date: March 2019

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604601A / *Infantry Support Weapons*

Project (Number/Name)
S60 / *Clothing & Equipment*

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
UNIFORM CLOTHING																												
Continue Fabric & FR Upgrades																												
FR Next Gen Materials Testing																												
Clothing Bag Upgrades and Evaluations																												
Cold/Extreme Cold Weather System MS C																												
Cold/Extreme Cold Weather Boot MS C																												
Modular Cold/Extreme Glove Sys MS C																												
Military Free Fall Environmental Equipment MS C																												
Jungle Ensemble Transition to Production																												
Jungle Boot Direct Requirement																												
INDIVIDUAL EQUIPMENT																												
On-the-Move Hydration Operational Life Testing (TIC/TIM/Des)																												
Tactical Holster Testing (interim)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army																Date: March 2019												
Appropriation/Budget Activity 2040 / 5									R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons								Project (Number/Name) S60 / Clothing & Equipment											
Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Tactical Holster Testing (final solution)																												
Increased Capacity MPHS																												
Ghillie Suit MS C																												
Parachutist Floatation Device																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S60 / <i>Clothing & Equipment</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UNIFORM CLOTHING	1	2011	4	2022
Continue Fabric & FR Upgrades	3	2009	4	2024
FR Next Gen Materials Testing	2	2021	4	2022
Clothing Bag Upgrades and Evaluations	1	2013	4	2024
Cold/Extreme Cold Weather System MS C	4	2023	4	2023
Cold/Extreme Cold Weather Boot MS C	3	2019	3	2019
Modular Cold/Extreme Glove Sys MS C	3	2020	3	2020
Jungle Ensemble Transition to Production	3	2018	3	2018
Jungle Boot Direct Requirement	4	2018	4	2018
INDIVIDUAL EQUIPMENT	2	2008	4	2022
Poncho Liner/Field Tarp Testing	2	2016	2	2017
On-the-Move Hydration Operational Life Testing (TIC/TIM/Desalinization)	2	2017	4	2024
Tactical Holster Testing (interim)	3	2017	2	2018
Tactical Holster Testing (final solution)	2	2018	3	2020
Increased Capacity MPHS	1	2020	1	2021
Ghillie Suit MS C	4	2019	4	2019
Parachutist Floatation Device	2	2020	2	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S61 / <i>Acis Engineering Development</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S61: <i>Acis Engineering Development</i>	-	3.908	3.608	2.988	-	2.988	2.864	2.924	2.967	1.450	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY2020 Program - Funds will be used to conduct Windows 10 qualification test, developmental and operational test of Aircrew Combat Equipment, and operational test of the Common Helmet Mounted Display.

A. Mission Description and Budget Item Justification

This project conducts Engineering and Manufacturing Development (EMD) for the Air Soldier System (Air SS). The Air SS is Army aircrew survival and mission equipment that improves safety, survivability, and human performance. The Air SS Capability Production Document (CPD) addresses capability gaps identified during combat operations in Iraq and Afghanistan including crew station compatibility challenges caused by equipment bulk, aircraft mishaps as a result of limited Situational Awareness (SA), and lack of functionally integrated aircrew mission and survival equipment. Air SS delivers reduced bulk and weight of survival equipment; improved crew station compatibility; and improved pilot SA and safety. The Air SS provides enhanced terrain, threat, and obstacle avoidance information; improved heads-up display (HUD) technologies that increase the aviator's SA; the capability to perform extended missions in extreme environmental and chemical/biological threat conditions; the capability to digitally replace paper-based DoD Flight Information Publications (Electronic Flight Bag); and develops and tests a modernized replacement for the Air Warrior survival vest that integrates with the Soldier Protection System body armor (Aircrew Combat Equipment).

This project also funds the development and test of deferred CPD capabilities including improved laser eye protection and tactile cueing that enhances aviator SA. This program does not duplicate any aircraft platform program efforts. Includes integration and interface of products on Soldiers.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Aircrew Integrated Systems (ACIS) Engineering Development	3.908	3.492	2.988	-	2.988
Description: Development, Integration, evaluation, testing, and qualification of Air Soldier System multi-phased capabilities as technologies mature.					
FY 2019 Plans: Continue Aircrew Combat Ensemble and Electronic Flight Bag Developmental Test and Operational Test as part of the developmental effort for the Air Soldier System Pre-planned Product Improvements Phase.					
FY 2020 Base Plans: Funds will be used to conduct Windows 10 qualification test, developmental and operational test of Aircrew Combat Equipment, and operational test of the Common Helmet Mounted Display.					
FY 2019 to FY 2020 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army								Date: March 2019			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S61 / <i>Acis Engineering Development</i>			
B. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total			
Changing aircrew safety and survivability program priorities.											
Title: FY2019 SBIR / STTR Transfer				-	0.116	-	-	-			
Description: Reflects FY2019 \$116,000 SBIR Title 15 USC ?638(f)(1) Transfer.											
FY 2019 Plans: Reflects FY2019 \$116,000 SBIR Title 15 USC ?638(f)(1) Transfer.											
FY 2019 to FY 2020 Increase/Decrease Statement: Reflects FY2019 \$116,000 SBIR Title 15 USC ?638(f)(1) Transfer.											
Accomplishments/Planned Programs Subtotals				3.908	3.608	2.988	-	2.988			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• AZ3110: <i>Aircrew Integrated Systems</i>	53.366	27.243	48.255	-	48.255	48.303	52.814	24.698	24.834	0.000	279.513
Remarks											
D. Acquisition Strategy											
Engineering and Manufacturing Development efforts for the Air SS program include development, integration, test, and airworthiness qualification of aviator flight display symbology technologies that will increase crew member situational awareness, and aircrew protective and survival equipment that reduces bulk and weight and improves crew station compatibility and mission effectiveness. Air SS includes improvements to the current flight helmet; improvements to the survival gear carriage system; lightweight body armor; environmental protective clothing and personal survival equipment; and a day/night helmet-mounted flight symbology display for UH-60 and CH-47 aviators. Efforts continue to develop deferred capabilities as defined within the Capability Development Document (CDD) to include Common Operating Environment modernization initiatives and enhanced laser eye protection.											
Development efforts are conducted using a mix of both Cost and Firm Fixed Price Contracts with industry utilizing full and open competition. Each development effort is individually evaluated and the appropriate contract type is selected in order to appropriately share risk between industry and the government. Risk reduction, developmental, and operational testing are conducted utilizing Reimbursable orders placed with Other Government Agencies under either Project Order Law, Title 41, United States Code, section 6307 or the Economy Act, Title 31, United States Code, section 1535.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S61 / Acis Engineering Development					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PM Administration	Allot	Various Government : Huntsville, Alabama	3.601	0.396		0.197		0.197		-		0.197	Continuing	Continuing	Continuing
Subtotal			3.601	0.396		0.197		0.197		-		0.197	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Warrior and Air Soldier System Development	C/CPFF	Various Government : Various Locations	60.625	1.665		1.469		0.725		-		0.725	Continuing	Continuing	Continuing
Subtotal			60.625	1.665		1.469		0.725		-		0.725	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Matrix Support	RO	Various Government : Various Locations	4.107	0.292		0.055		0.055		-		0.055	Continuing	Continuing	Continuing
FY2019 SBIR / STTR Transfer	Various	SBIR / STTR Transfer : Title 15 USC ?638(f)(1)	-	-		0.116		-		-		-	Continuing	Continuing	Continuing
Subtotal			4.107	0.292		0.171		0.055		-		0.055	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Developmental and Operational Testing	RO	Various Activities : Various Locations	13.772	1.555		1.771		2.011		-		2.011	Continuing	Continuing	Continuing

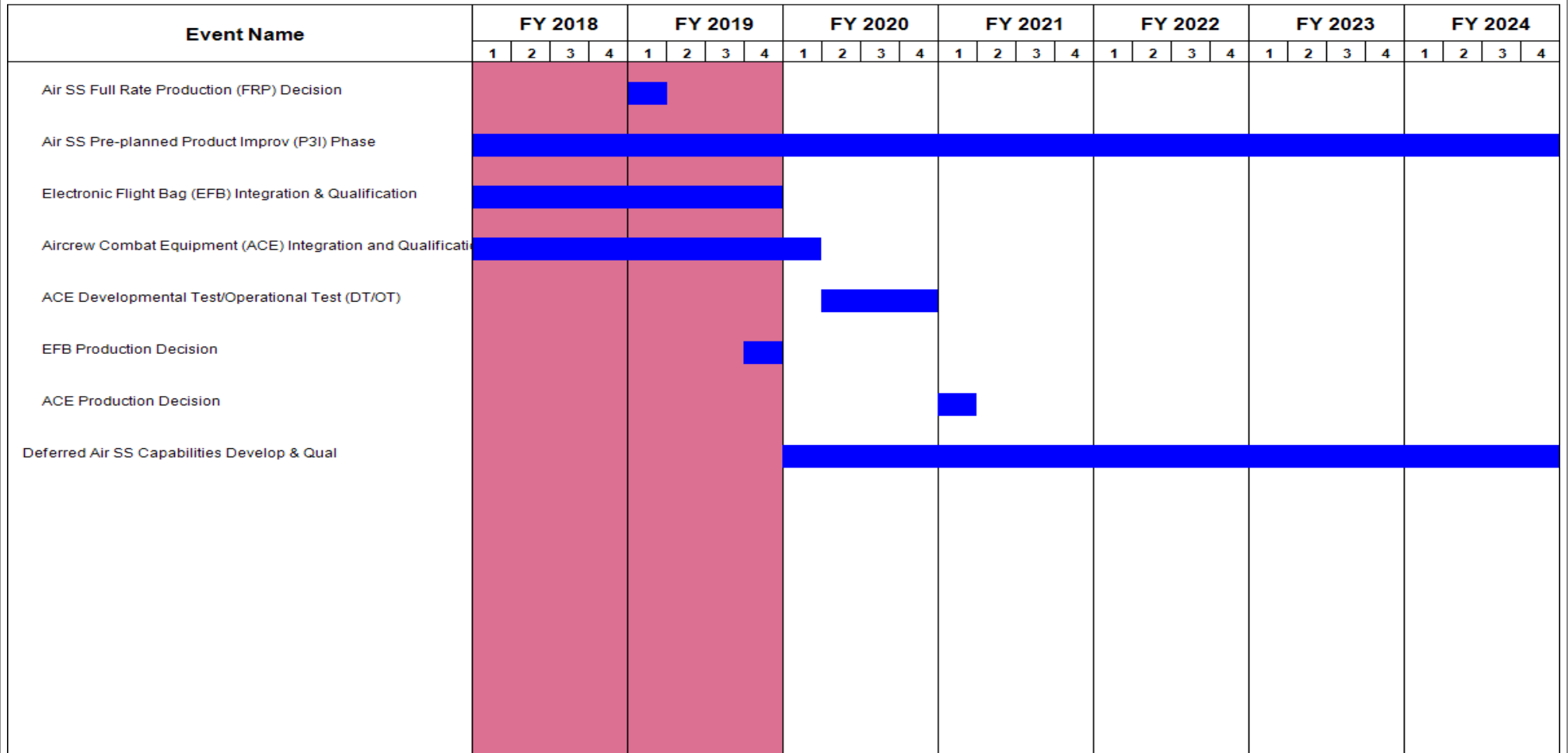
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S61 / Acis Engineering Development					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			13.772	1.555		1.771		2.011		-		2.011	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			82.105	3.908		3.608		2.988		-		2.988	Continuing	Continuing	N/A
Remarks FY2019 R-2A Project Funding Total of \$3,492 reflects revised funding after FFRDC and SBIR Title 15 USC ?638(f)(1) adjustments.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army	Date: March 2019
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>
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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S61 / <i>Acis Engineering Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Air Soldier System System (Air SS) Dev, Dem and Qual Test	1	2012	4	2015
Air Soldier System Milestone B	1	2012	1	2012
Air SS Prelim Design Review(PDR)	1	2013	1	2013
Air SS Critical Design Review (CDR)	4	2013	4	2013
Air SS Developmental Testing (DT1)	1	2014	4	2014
Air SS Customer Test	4	2014	4	2014
Air SS Milestone C/Low Rate Initial Production (LRIP)	1	2017	1	2017
Air SS Added Capability Developmental Test	3	2015	3	2015
Air SS Initial Operational Test & Eval (IOT&E)	4	2015	1	2016
Air SS Full Rate Production (FRP) Decision	1	2019	1	2019
Air SS Pre-planned Product Improv (P3I) Phase	1	2016	4	2024
Electronic Flight Bag (EFB) Integration & Qualification	1	2017	4	2019
Aircrew Combat Equipment (ACE) Integration and Qualification	1	2017	1	2020
EFB Preliminary Design and Platform Integration	3	2016	4	2016
EFB Detailed Design & Qualification	1	2017	3	2017
ACE Developmental Test/Operational Test (DT/OT)	2	2020	4	2020
EFB Production Decision	4	2019	4	2019
ACE Production Decision	1	2021	1	2021
Deferred Air SS Capabilities Develop & Qual	1	2020	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S62 / Counter-Defilade Target Engagement - SDD			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S62: Counter-Defilade Target Engagement - SDD	-	0.000	1.998	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.998
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The Maneuver Center of Excellence (MCoE), FT Benning, GA (User Community) identifies the Counter Defilade Target Engagement (CDTE) as a critical capability gap for our Soldiers in combat. A Next Generation Counter Defilade Weapon to mitigate the critical capability gap (defeating defilade (hidden) targets from 35-500m) is required. The Next Generation Counter Defilade Weapon will provide the Infantry Soldier with a leap-ahead overmatch capability that allows the Soldier to engage defilade targets with a high degree of accuracy while posing minimal burden, in terms of weight and size. The system will integrate a weapon, ammunition, and a target acquisition/fire control subsystem that integrates thermal capability with direct-view optics, laser rangefinder, environmental sensors, ballistic computer, and internal display.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Support Next Generation Counter Defilade Weapon Requirements Development								-	1.934	-	-	-
FY 2019 Plans: Support Next Generation Counter Defilade Weapon Requirements Development.												
FY 2019 to FY 2020 Increase/Decrease Statement: This program has been terminated.												
Title: FY2019 SBIR / STTR Transfer								-	0.064	-	-	-
FY 2019 Plans: FY2019 SBIR / STTR Transfer												
FY 2019 to FY 2020 Increase/Decrease Statement: None												
Accomplishments/Planned Programs Subtotals								-	1.998	-	-	-
C. Other Program Funding Summary (\$ in Millions) N/A Remarks												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>
D. Acquisition Strategy Utilize existing hardware to conduct user requested demonstrations and analyses that will be used to inform counter defilade requirements. As counter defilade requirements are finalized for the Next Generation Counter Defilade Weapon, acquisition approaches will be explored and selected in order to provide this capability to the user.		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S62 / Counter-Defilade Target Engagement - SDD					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	Various	Performed by Government : Various Activities	4.908	-		0.334	Mar 2019	-		-		-	0.000	5.242	-
Contract Management Services	MIPR	ACC-APG : Aberdeen	0.146	-		-		-		-		-	0.000	0.146	-
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	-	-		0.064	Nov 2018	-		-		-	0.000	0.064	-
Subtotal			5.054	-		0.398		-		-		-	0.000	5.452	N/A
Remarks Program is under review by the Army Acquisition Executive (AAE) for a path forward.															
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Contract Termination Costs	SS/BA	ATK : Plymouth, MN	135.840	-		-		-		-		-	0.000	135.840	-
Subtotal			135.840	-		-		-		-		-	0.000	135.840	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Contractor Support	Option/ FFP	Various : PMSW, Picatinny Arsenal. NJ	0.620	-		-		-		-		-	0.000	0.620	-
Training Development Support	MIPR	TACOM/PEO STRI : TACOM/PEO STRI	0.993	-		-		-		-		-	0.000	0.993	-
Engineering Support	MIPR	Government : Various	8.912	-		0.350	Mar 2019	-		-		-	0.000	9.262	-
Subtotal			10.525	-		0.350		-		-		-	0.000	10.875	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>					

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Developmental/System Tests and Articles	SS/CPFF	Performed by Contractor : ATK, Plymouth, MN	19.604	-		-		-		-		-		0.000	19.604	-
Developmental/Operational Tests	Various	Performed by Government : Various Activities	15.445	-		1.250	Mar 2019	-		-		-		0.000	16.695	-
Subtotal			35.049	-		1.250		-		-		-		0.000	36.299	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	186.468	-		1.998		-		-		-	0.000	188.466	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Program Management																												
Design, Develop, Engineer, Test & Manage Improvements																												
Production Qualification Test (PQT)																												
Live Fire Test & Evaluation (LFT&E)																												
Initial Operational Test & Evaluation (IOT&E)																												
Natural Environments/Airborne LUT																												
Type Classification - Standard																												
Full Rate Production (FRP)																												
Design, Develop & Fabricate Support Requirements Development																												
Engineering Support																												
Test and Evaluation																												
Program Management FY19																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S62 / <i>Counter-Defilade Target Engagement - SDD</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Design, Develop & Fabricate	1	2011	4	2017
Engineering and Training Development	1	2011	4	2017
Development Tests & Evaluation	1	2011	4	2017
Program Management	1	2011	4	2018
Design, Develop, Engineer, Test & Manage Improvements	1	2021	4	2021
Pre-Production Qualification Testing (PPQT #2)	4	2016	2	2017
Limited User Testing (LUT)	2	2017	2	2017
Low Rate Initial Production (LRIP)-IOT&E	3	2017	4	2017
Production Qualification Test (PQT)	3	2018	1	2019
Live Fire Test & Evaluation (LFT&E)	1	2019	2	2019
Initial Operational Test & Evaluation (IOT&E)	3	2019	1	2020
Natural Environments/Airborne LUT	2	2019	1	2020
Type Classification - Standard	2	2020	2	2020
Full Rate Production (FRP)	3	2020	4	2021
Design, Develop & Fabricate Support Requirements Development	1	2019	4	2019
Engineering Support	1	2019	4	2019
Test and Evaluation	1	2019	4	2019
Program Management FY19	1	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S63 / Individual Weapons Engineering Development			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S63: Individual Weapons Engineering Development	-	9.664	5.749	7.076	-	7.076	15.377	7.918	6.284	0.974	0.000	53.042
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2019 Transition of Next Generation Carbine/Rifle work effort to Program Element 0604601A/Infantry Support Weapons EW4/Crew Served Weapons Engineering Development.

FY 2020 New starts include Next Generation Airburst, Current and Legacy Weapon Improvements, and Next Generation Optics.

Previously funded: Adaptive Lubricious Coatings and Weapon Upgrades and Accessories are now funded under Current and Legacy Weapon Improvements. Optic Upgrades are now covered under Next Generation Optics.

A. Mission Description and Budget Item Justification

The Individual Weapons Engineering Development program provides funds to transition components or prototypes from Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) and other domestic and foreign sources of small arms weapon systems to demonstrate, test and evaluate capability near or at planned operational requirements. Small arms systems include weapons up to 40 millimeter in caliber. Current and future efforts focus on system improvements designed to enhance lethality, target acquisition, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include system development, integration (to include human-systems), demonstration, test and evaluate components, prototypes and operational system prototypes of small arms weapon systems and/or enhancements. Benefits include continuous improvements to small arms weapon systems, fire control equipment, optics, gun barrels, ancillary equipment, training devices, component mounts, weapon mounts, and weapon/ammunition interface of current small arms fleet or new weapon systems.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: New Weapon Systems	7.815	4.438	4.379	-	4.379
Description: Development of new weapon systems					
FY 2019 Plans: Will begin the development of the Next Generation Carbine/Rifle. BCTs require the capability to engage protected and unprotected threat personnel with aimed lethal and accurate fires exceeding the capability of current carbines available today.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) S63 / Individual Weapons Engineering Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Squad Designated Marksman Rifle (SDMR): Will continue to test and evaluate the Squad Designated Marksman Rifle, a highly accurate long range rifle system for Squad Designated Marksmen within BCTs.						
New Weapon Evaluations and Assessments: Will continue to provide initial evaluation and assessment of new weapons.						
FY 2020 Base Plans: FY 2020 New Start: Next Generation Airburst: Will develop advanced technologies to incorporate into an airburst weapon system that will defeat targets behind cover, targets that are exposed, and counter unmanned aerial systems.						
Weapon System Upgrades and Accessories: Will continue to test, evaluate, and analyze ongoing and new activities to enhance small arms weapon systems.						
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Decrease to support the National Defense Strategy.						
Title: Small Arms Weapon Systems Enhancements		0.180	0.900	2.497	-	2.497
Description: Description: Enhancements and developments of small arms weapon Systems						
FY 2019 Plans: Adaptive Lubricious Coatings: Will continue to develop manufacturing technology to support production of super hydrophobic and other coatings in support of Small Arms Weapons. Will assess and evaluate current manufacturing process studies and assessments to adapt the coating technology into weapon Original Equipment Manufacturer manufacturing processes.						
Small Business Innovation Research (SBIR) Enhancements: Will continue to support Phase II Enhancement and/or initialization of Phase III SBIR activities.						
Weapon Upgrades and Accessories: Will continue to test, evaluate, and analyze ongoing and new activities to enhance small arms weapons.						
FY 2020 Base Plans: FY 2020 New Start: Current and Legacy Weapon Improvements: Will assess and evaluate selected capabilities and improvements for all current and legacy weapon systems.						

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons	Project (Number/Name) S63 / Individual Weapons Engineering Development				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Small Business Innovation Research (SBIR) Enhancements: Will continue to support Phase II Enhancement and/or initialization of Phase III SBIR activities. FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 Increase to support the National Defense Strategy.						
Title: Ammunition Description: Description: Improvement of small arms ammunition FY 2019 Plans: Ammunition Upgrades: Will continue to evaluate the effect of new ammunition on small arms weapons. FY 2020 Base Plans: Ammunition Upgrades: Will continue to evaluate the effect of new ammunition on small arms weapon systems.		0.050	0.050	0.050	-	0.050
Title: Combat Optics Description: Description: Improvement of combat optics FY 2019 Plans: Optics Upgrades: Will continue to perform engineering evaluations, verification and validation of weapon optics performance requirements. FY 2020 Base Plans: Next Generation Optics: Will continue to perform engineering, evaluations, verification and validation of weapon optics and electro-optic capabilities and improvements.		1.569	0.100	0.100	-	0.100
Title: Research and Analysis Description: Market Research and Cost Benefit Analysis FY 2019 Plans: Will continue Market Research and Cost Benefit Analysis of new small arms weapon and/or enhancements for engineering and manufacturing development. FY 2020 Base Plans:		0.050	0.050	0.050	-	0.050

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army									Date: March 2019		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S63 / Individual Weapons Engineering Development			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Will continue Market Research and Cost Benefit Analysis of new small arms weapon systems and/or enhancements for engineering and manufacturing development.											
Title: FY2019 SBIR / STTR Transfer							-	0.211	-	-	-
FY 2019 Plans: FY2019 SBIR / STTR Transfer											
FY 2019 to FY 2020 Increase/Decrease Statement: None											
Accomplishments/Planned Programs Subtotals							9.664	5.749	7.076	-	7.076
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• S54: Small Arms Improvement	27.832	7.677	14.555	-	14.555	16.097	19.232	17.439	10.487	0.000	113.319
• G01507: COMPACT SEMI-AUTOMATIC SNIPER SYSTEM	-	46.236	9.860	-	9.860	-	-	-	-	0.000	56.096
• G13503: M4A1 CARBINE	43.150	69.606	30.331	1.183	31.514	7.883	4.345	-	-	0.000	156.498
• GB3007: M4 Carbine Mods	31.069	38.075	17.595	-	17.595	4.829	4.904	4.409	10.530	Continuing	Continuing
• G01501: XM320 Grenade Launcher Module (GLM)	18.524	18.197	0.191	0.526	0.717	5.996	9.917	11.884	14.456	Continuing	Continuing
• G15325: Handgun	8.326	48.251	6.174	0.248	6.422	4.915	5.131	-	-	Continuing	Continuing
• GL3200: Items Less Than \$5.0m (WOCV-WTCV)	5.075	4.571	3.066	-	3.066	2.766	2.869	2.977	3.174	Continuing	Continuing
• GC0925: Modifications Less Than \$5.0m (WOCV-WTCV)	2.219	5.577	4.327	-	4.327	2.606	2.362	2.338	2.716	Continuing	Continuing
Remarks											
In support of Small Arms Requirements, components or prototypes developed in Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4) is transitioned to Individual Weapons Engineering Development, Project S63, Program Element 0604601A, (Budget Activity 5) to conduct engineering and manufacturing development. Once the component, prototype or operational prototype achieves Milestone C and type classification the item transitions to small arms weapon systems production or modification program.											

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>
D. Acquisition Strategy Primary strategy is to mature and finalize design efforts, award Research, Development, Test and Evaluation (RDT&E) hardware contracts, and test and evaluate systems that result in type classification and follow-on production contract awards.		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S63 / Individual Weapons Engineering Development					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	Allot	PM Soldier Weapons, : Picatinny Arsenal	9.726	0.405	Mar 2018	0.300	Mar 2019	0.050	Mar 2020	-		0.050	Continuing	Continuing	Continuing
Travel	MIPR	PM Soldier Weapons, : Picatinny Arsenal	1.349	0.075	Mar 2018	0.060	Mar 2019	0.062	Mar 2020	-		0.062	Continuing	Continuing	Continuing
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	-	-		0.211	Nov 2018	-		-		-	Continuing	Continuing	Continuing
Subtotal			11.075	0.480		0.571		0.112		-		0.112	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Fabrication	Various	Various : Multiple Contractors	3.200	0.500	Mar 2018	3.600	Mar 2019	1.275	Apr 2020	-		1.275	Continuing	Continuing	Continuing
Hardware Development	MIPR	Army Research Development Engineering Centers, : Multiple	8.065	0.035	Mar 2018	0.150	Mar 2019	1.035	Apr 2020	-		1.035	Continuing	Continuing	Continuing
Subtotal			11.265	0.535		3.750		2.310		-		2.310	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering	MIPR	Army Research Development Engineering Centers, : Multiple	62.100	5.521	Mar 2018	0.320	Mar 2019	2.346	Mar 2020	-		2.346	Continuing	Continuing	Continuing
Logistics	MIPR	TACOM, : Warren	4.846	0.124	Mar 2018	0.100	Mar 2019	0.124	Mar 2020	-		0.124	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S63 / Individual Weapons Engineering Development					
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Human Research and Engineering	MIPR	Army Research Laboratory, : Aberdeen Proving Ground	3.721	0.124	Mar 2018	0.100	Mar 2019	0.124	Mar 2020	-		0.124	Continuing	Continuing	Continuing
Subtotal			70.667	5.769		0.520		2.594		-		2.594	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Developmental Testing	MIPR	Army Developmental Test Command, : Aberdeen Proving Ground	25.544	0.785	Mar 2018	0.500	Mar 2019	0.700	Mar 2020	-		0.700	Continuing	Continuing	Continuing
Operational Testing	MIPR	Army Test and Evaluation Command, : Aberdeen Proving Ground	14.998	1.752	Mar 2018	0.204	Mar 2019	1.010	Mar 2020	-		1.010	Continuing	Continuing	Continuing
Validation Testing	MIPR	Army Test and Evaluation Centers, : Multiple	9.519	0.343	Mar 2018	0.204	Mar 2019	0.350	Mar 2020	-		0.350	Continuing	Continuing	Continuing
Subtotal			50.061	2.880		0.908		2.060		-		2.060	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			143.068	9.664		5.749		7.076		-		7.076	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
NEW WEAPON SYSTEMS																												
Next Generation Airburst																												
Modular Handgun System (MHS)																												
Squad Designated Marksman Rifle (SDMR)																												
New Weapon Systems Evaluations and Assessments																												
SMALL ARMS WEAPON SYSTMS ENHANCEMENTS																												
Adaptive Lubricious Coatings																												
Small Business Innovation Research (SBIR) Enhancements																												
Weapon Upgrades and Accessories																												
Current and Legacy Weapon Improvements																												
AMMUNITION																												
Ammunition Upgrades																												
COMBAT OPTICS																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) S63 / Individual Weapons Engineering Development	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Grenadier Sighting System (GSS) for the M320 Grenade Lau																												
Rifle Combat Optic Technology Refresh																												
Intelligent Rail																												
Optics Upgrades																												
Next Generation Optics																												
RESEARCH AND ANALYSIS																												
Research and Analysis of Small Arms																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S63 / <i>Individual Weapons Engineering Development</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NEW WEAPON SYSTEMS	1	2007	4	2024
Next Generation Airburst	1	2020	4	2022
Individual Carbine Competition	1	2010	4	2013
Modular Handgun System (MHS)	1	2012	4	2018
Precision Sniper Rifle (PSR)	1	2015	4	2016
Squad Designated Marksman Rifle (SDMR)	1	2014	4	2019
New Weapon Systems Evaluations and Assessments	1	2018	4	2024
SMALL ARMS WEAPON SYSTMS ENHANCEMENTS	1	2008	4	2024
Compact Semi-Automatic Sniper System (CSASS)	1	2015	4	2016
Powered Rail now known as Intelligent Rail	1	2013	4	2016
Adaptive Lubricious Coatings	1	2018	4	2020
Small Business Innovation Research (SBIR) Enhancements	1	2017	4	2024
Weapon Upgrades and Accessories	1	2008	4	2019
Current and Legacy Weapon Improvements	1	2020	4	2024
AMMUNITION	1	2008	4	2024
XM1112 40MM Airburst Non-Lethal Munitions	1	2010	4	2016
Ammunition Upgrades	1	2008	4	2024
COMBAT OPTICS	1	2008	4	2024
Mounted Machine Gun Optics (MMO)	1	2015	4	2016
Squad Fire Control Optic	1	2014	4	2015
Grenadier Sighting System (GSS) for the M320 Grenade Launcher	1	2009	4	2019
Rifle Combat Optic Technology Refresh	1	2017	4	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) S63 / Individual Weapons Engineering Development
		Start		End
Events	Quarter	Year	Quarter	Year
Intelligent Rail	1	2017	4	2018
Optics Upgrades	1	2018	4	2019
Next Generation Optics	1	2020	4	2024
RESEARCH AND ANALAYSIS	1	2012	4	2024
Research and Analysis of Small Arms	1	2015	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S64 / Common Remotely Operated Wpn Sys (CROWS)			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S64: Common Remotely Operated Wpn Sys (CROWS)	-	24.753	0.000	9.300	-	9.300	1.500	0.000	0.000	0.000	0.000	35.553
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Maneuver Support Center of Excellence (MSCoE) at FT Leonard Wood, Missouri (user community) has identified continued development of the Common Remotely Operated Weapon Station (CROWS) as a critical improvement for the Soldier in a combat environment. By addressing the capability gap of non-turreted, lightly armored vehicles where the gunner is exposed to enemy fire, the current CROWS system provides the ability to rapidly and accurately locate and engage the enemy while allowing platform gunners to remain under armor, thereby providing greater protection and increasing overall lethality.

Next generation requirements for the CROWS are identified in the CROWS Increment II Capability Development Document (CDD). CROWS Increment II capability improvements will upgrade overall situational awareness, survivability and lethality. Increment II requirements include improved sensor systems for enhanced identification ranges; wider fields of view; improved on-the-move accuracy; training capability; battlefield obscurants; mission data recording for After Action Reviews (AAR); increased lethality using legacy and future anti-personnel and anti-materiel precision scalable lethal and non-lethal weapon systems; improved ballistics protection; adaptability to integrate on a variety of legacy and future platforms including ground vehicles, watercraft, semi-autonomous and autonomous platforms; precision targeting including visible and infrared (IR) pointers; target hand-off; slew-to-cue; escalation of force (EOF) capabilities; and other additional system modifications and improvements.

Obsolescence and Increment II requirements will address recommendations identified in the Operational Test Agency Milestone Assessment Report (OMAR) and user community feedback. These modifications include, but are not limited to: improved optics survivability; auto-zoom; improved auto-tracking; improved sensors for increased situational awareness; and improved rounds counter. Additionally, development efforts will include system and component level reliability improvements that will extend system life and reduce overall CROWS logistics footprint.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Contractor Development and Prototype Fabrication	17.652	-	6.975	-	6.975
Description: Contractor development of system improvements, modifications, and fabrication of prototypes.					
FY 2020 Base Plans: Contractor will resume development of multiple system improvements and modifications to enhance situational awareness and lethality, escalation of force and non-lethal capabilities. These improvements will include a multi-user/multi-weapon capability, an embedded trainer to replace the current appended trainer device, and an					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army				Date: March 2019				
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) S64 / Common Remotely Operated Wpn Sys (CROWS)				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
enhanced, digital, high definition visual imaging module. These improvements will also include the integration of new weapons and other effectors and the development and modification for integration into new vehicles and other platforms.								
FY 2019 to FY 2020 Increase/Decrease Statement: Increase for contractor to resume development of system improvements and modifications.								
Title: Engineering Support Description: Government engineering support and technical oversight.				4.455	-	1.447	-	1.447
FY 2020 Base Plans: Will provide government engineering support, technical oversight, and development of multiple system improvements and modifications to enhance situational awareness and lethality, escalation of force and non-lethal capabilities.								
FY 2019 to FY 2020 Increase/Decrease Statement: Increase for government engineering support and technical oversight of system improvements.								
Title: Test and Evaluation Description: Testing and evaluation at government ranges and facilities.				0.951	-	0.258	-	0.258
FY 2020 Base Plans: Will provide government testing and evaluation of system improvements and modifications to enhance situational awareness and lethality, escalation of force and non-lethal capabilities.								
FY 2019 to FY 2020 Increase/Decrease Statement: Increase for government testing and evaluation of system improvements and modifications.								
Title: Program Management Description: Program office management and oversight of government and contractor efforts.				1.695	-	0.620	-	0.620
FY 2020 Base Plans:								

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army							Date: March 2019				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>			Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Program office will provide oversight and management of contractor and government efforts for system improvements and modifications to enhance situational awareness and lethality, escalation of force and non-lethal capabilities. <i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> Increase to program office management for contractor and government efforts to development system improvements and modifications.											
Accomplishments/Planned Programs Subtotals							24.753	-	9.300	-	9.300
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020 Base</u>	<u>FY 2020 OCO</u>	<u>FY 2020 Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• G04700: <i>Common Remotely Operated Weapons Station</i>	22.250	39.346	24.007	4.182	28.189	24.560	-	-	-	0.000	114.345
Remarks											
D. Acquisition Strategy											
The program objective is to continue developing, improving and fielding the current generation (Increment I) and next generation (Increment II) of CROWS on various platforms in accordance with the Basis of Issue Plan (BOIP). The program supports new and emerging urgent requirements like the integration of the Mine Resistant Ambush Protected (MRAP) family of vehicles, ground combat systems, Joint Lightweight Tactical Vehicles (JLTV) and fixed site mounting systems to support Integrated Base Defense (IBD).											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S64 / Common Remotely Operated Wpn Sys (CROWS)					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management	MIPR	PM Soldier Weapons : Picatinny Arsenal, NJ	2.745	1.695	Apr 2018	-		0.620	Oct 2019	-		0.620	0.000	5.060	-
Subtotal			2.745	1.695		-		0.620		-		0.620	0.000	5.060	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Technology Refresh, Obsolescence and Increment II Enhancements	C/FFP	Kongsberg Protech Systems USA : Johnstown, PA	11.634	-		-		-		-		-	0.000	11.634	-
Contractor Development and Prototype Fabrication	C/FFP	TBD : TBD	4.431	17.652	Aug 2018	-		6.975	Nov 2019	-		6.975	0.000	29.058	-
Subtotal			16.065	17.652		-		6.975		-		6.975	0.000	40.692	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Engineering Support	MIPR	ARDEC : Picatinny Arsenal, NJ	6.365	4.455	Apr 2018	-		1.447	Oct 2019	-		1.447	0.000	12.267	-
Subtotal			6.365	4.455		-		1.447		-		1.447	0.000	12.267	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Planning and Execution	MIPR	Multiple : Multiple	0.807	0.951	May 2018	-		0.258	Dec 2019	-		0.258	0.000	2.016	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>				

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			0.807	0.951		-		0.258		-		0.258	0.000	2.016	N/A

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	25.982	24.753	0.000	9.300	-	9.300	0.000	60.035	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons		Project (Number/Name) S64 / Common Remotely Operated Wpn Sys (CROWS)	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Contractor Design and Prototype Fabrication																												
Engineering Support (Government)																												
Development Test & Evaluation																												
Program Management																												
Contractor Design and Prototype Fabrication (II)																												
Engineering Support (II)																												
Test and Evaluation (II)																												
Program Management (II)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S64 / <i>Common Remotely Operated Wpn Sys (CROWS)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Contractor Design and Prototype Fabrication	1	2016	4	2018
Engineering Support (Government)	3	2015	4	2018
Development Test & Evaluation	3	2015	4	2018
Program Management	3	2015	4	2018
Increment II Product Improvement	2	2017	4	2017
Contractor Design and Prototype Fabrication (II)	1	2020	4	2020
Engineering Support (II)	1	2020	4	2020
Test and Evaluation (II)	1	2020	4	2020
Program Management (II)	1	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S70 / Personnel Recovery Support System (PRSS)			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
S70: Personnel Recovery Support System (PRSS)	-	1.283	0.967	0.000	-	0.000	0.000	0.000	0.395	0.797	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Not applicable for this item.												
A. Mission Description and Budget Item Justification This project provides the continued maturation of PRSS products that enable operations to report and locate isolated Soldiers. The PRSS program consists of the enhancement of existing products to ensure continued successful interoperability within the relevant theater of operations and the Continental United States (CONUS), and testing of the encrypted Personnel Recovery Device (PRD) that operates over a secure architecture.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Development of Personnel Recovery Support System (PRSS) Description: Integration, evaluation, testing and qualification of PRSS products to ensure continued successful interoperability within the relevant theater of operation, and development of a PRD that operates over a secure architecture. FY 2019 Plans: Develop and test an alternate PRD secure waveform to ensure continual cyber security is maintained. FY 2019 to FY 2020 Increase/Decrease Statement: Program decrease is due to realignment of funding to higher Army's modernization priorities in support of the National Defense Strategy.								1.283	0.936	-	-	-
Title: FY2019 SBIR / STTR Transfer FY 2019 Plans: FY2019 SBIR / STTR Transfer. FY 2019 to FY 2020 Increase/Decrease Statement: FY2019 SBIR/STTR Transfer reflected in FY2019 only.								-	0.031	-	-	-
Accomplishments/Planned Programs Subtotals								1.283	0.967	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2020</u>	<u>FY 2020</u>	<u>FY 2020</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Complete</u>	<u>Total Cost</u>
• G01101: <i>Personnel Recovery Support System (PRSS)</i>	5.390	10.175	4.281	5.101	9.382	9.731	4.598	4.604	5.379	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Execute PRSS program development effort for performance optimization through contracts with industry and Military Interdepartmental Purchase Requests to other Governmental agencies. Perform continuing development and test of new waveforms and hardware to ensure successful interoperability for personnel recovery, and to mitigate potential security compromises to the PRSS system.											
In FY 2023 PRSS products will be adapted and tested for integration onto various Army and sister service aerial platforms to increase coverage beyond current theaters of operation.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) S70 / Personnel Recovery Support System (PRSS)					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PM Adminstration	Allot	Various Government : Huntsville, Alabama	0.947	0.025		0.016		-		-		-	Continuing	Continuing	Continuing
Subtotal			0.947	0.025		0.016		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Personnel Recovery Support System Development Systems Engineering	MIPR	Various Organizations : Various Locations	7.718	0.630		0.442		-		-		-	Continuing	Continuing	Continuing
Subtotal			7.718	0.630		0.442		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Matrix Support	MIPR	Various Organizations : Various Locations	1.600	0.475		0.403		-		-		-	Continuing	Continuing	Continuing
FY2019 SBIR/STTR Transfer	Various	FY2019 SBIR/STTR Transfer : FY2019 SBIR/STTR Transfer	-	-		0.031		-		-		-	Continuing	Continuing	Continuing
Subtotal			1.600	0.475		0.434		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>				Project (Number/Name) <i>S70 / Personnel Recovery Support System (PRSS)</i>				

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	
Developmental Testing / Operational Testing	MIPR	Various Organizations : Various Locations	3.181	0.153		0.075		-		-		-	Continuing	Continuing	Continuing	
Subtotal			3.181	0.153		0.075		-		-		-	Continuing	Continuing	N/A	

			Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			13.446	1.283	0.967	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>		Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Personnel Recovery Support System (PRSS) Development Oversight																												
Resume PRSS Development Oversight																												
PRSS Development and Test																												
Resume PRSS Development and Test																												
PRSS LUT and Operational Testing																												
PRSS Upgrades and Adaptations to New Platforms																												
Resume PRSS Upgrades and Adaptations to New Platforms																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) S70 / <i>Personnel Recovery Support System (PRSS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Personnel Recovery Support System (PRSS) Development Oversight	1	2010	4	2019
Resume PRSS Development Oversight	1	2023	4	2024
PRSS Development and Test	1	2010	4	2019
Resume PRSS Development and Test	1	2023	4	2024
PRSS Prototype Hardware Build and Integration	3	2010	2	2016
PRSS LUT and Operational Testing	3	2018	1	2019
PRSS Upgrades and Adaptations to New Platforms	1	2015	4	2019
Resume PRSS Upgrades and Adaptations to New Platforms	1	2023	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army									Date: March 2019			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) VS5 / Soldier Protective Equipment			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
VS5: Soldier Protective Equipment	-	1.725	6.050	6.627	-	6.627	8.327	9.666	9.490	8.507	0.000	50.392
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This funding supports Engineering and Manufacturing Development (EMD) and full rate production decision reviews of Soldier Protective Equipment. It leverages advancements in technology to continue improvements to the Army's Personal Protective Equipment (PPE) portfolio to include hard and soft body armor components (Vital Torso Protection (VTP) and Torso and Extremity Protection (TEP) respectfully), helmets (Integrated Head Protection System (IHPS) and other personal protective equipment (Transition Combat Eye Protection (TCEP)).												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Soldier Protective Equipment								1.725	6.050	6.627	-	6.627
Description: Project VS5 (Soldier Protective Equipment) supports engineering and manufacturing development of Individual Soldier Ballistic Protection equipment. It will leverage advancements in technology to continue incremental improvements to Personal Protective Equipment (PPE).												
FY 2019 Plans: Continue to evaluate and develop system and subsystem technologies across the PPE portfolio from emerging ballistic/blast threats. Begin development of laser eye protection for the Transition Combat Eye Protection (TCEP) system. Continue to test ballistic properties of current PPE after exposure to extreme storage conditions for better shelf and service life predictions. Continue SPS system human factors and environmental/exposure testing.												
FY 2020 Base Plans: Continue to evaluate and develop system and subsystem technologies across the PPE portfolio from emerging ballistic/blast threats. Continue to test ballistic properties of current PPE after exposure to extreme storage conditions for better shelf and service life predictions. Continue Soldier Protection System (SPS) system human factors and environmental/exposure testing, including Cold & Tropical regions, durability, etc.). Plan to conduct First Article Test (FAT) of Next GEN IHPS. Plan for introducing advanced Technology and materials into production processes as these technologies mature.												
FY 2019 to FY 2020 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army							Date: March 2019				
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>			Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>				
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Funding increase in Soldier Protective Equipment portfolio is due to anticipated requirement changes in FY20.											
Accomplishments/Planned Programs Subtotals							1.725	6.050	6.627	-	6.627
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• VS4: <i>Soldier Protective Equipment</i>	29.934	21.126	2.836	-	2.836	4.444	4.909	6.488	8.150	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Acquisition strategies for these programs vary in methods, and range from: 1) Material Change programs that result in engineering changes to existing systems to; 2) Traditional development programs that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months, depending on the level of design complexity and testing required.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons				Project (Number/Name) VS5 / Soldier Protective Equipment					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Program Management Support	Allot	Various SPIE : Various	0.317	0.119		0.583		0.427		-		0.427	Continuing	Continuing	Continuing
Subtotal			0.317	0.119		0.583		0.427		-		0.427	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Prototype Contracts	Various	Various : Various	32.413	1.247		1.346		1.000		-		1.000	Continuing	Continuing	Continuing
Prod Sys Engineering Spt	MIPR	Various : Various	8.109	-		-		2.000		-		2.000	Continuing	Continuing	Continuing
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.221		-		-		-	0.000	0.221	-
Subtotal			40.522	1.247		1.567		3.000		-		3.000	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Matrix Engineering Spt	MIPR	Various : Various	2.867	0.235		1.881		0.500		-		0.500	Continuing	Continuing	Continuing
Subtotal			2.867	0.235		1.881		0.500		-		0.500	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Environmental/HFE	MIPR	Various DTC & OTC : Various DTC & OTC	10.686	0.124		2.019		2.700		-		2.700	Continuing	Continuing	Continuing
Subtotal			10.686	0.124		2.019		2.700		-		2.700	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army										Date: March 2019				
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604601A / Infantry Support Weapons					Project (Number/Name) VS5 / Soldier Protective Equipment				
		Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		54.392	1.725		6.050		6.627		-		6.627	Continuing	Continuing	N/A
Remarks														

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army

Date: March 2019

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604601A / *Infantry Support Weapons*

Project (Number/Name)
VS5 / *Soldier Protective Equipment*

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Test and Qualify Improvements to SPS through FY23																												
VTP LRIP Production																												
VTP RFP Submission		1																										
VTP SSEB			2																									
VTP FRP Decision							3																					
IHPS FRP							4																					
IHPS Contract FRP Contract Award												7																
TCEP Authorized Protective Eyewear (APEL) Update							5																					
TCEP Durability/Cold Weather Test																												
SPS System Level Test Technology Insertions																												
Next Gen IHPS Contract Award							6																					
Next Gen IHPS Deliveries																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604601A / <i>Infantry Support Weapons</i>	Project (Number/Name) VS5 / <i>Soldier Protective Equipment</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Test and Qualify Improvements to SPS through FY23	1	2015	4	2023
VTP LRIP Production	1	2017	4	2020
VTP RFP Submission	2	2018	2	2018
VTP SSEB	4	2018	4	2018
VTP FRP Decision	2	2019	2	2019
IHPS FRP	2	2019	2	2019
IHPS Contract FRP Contract Award	1	2020	1	2020
TCEP Authorized Protective Eyeware (APEL) Update	2	2019	2	2019
TCEP Durability/Cold Weather Test	2	2019	1	2020
SPS System Level Test Technology Insertions	1	2017	4	2023
Next Gen IHPS Contract Award	2	2019	2	2019
Next Gen IHPS Deliveries	2	2021	4	2023