Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army											Date: March 2019	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0603778A *I MLRS Product Improvement 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**
Total Program Element	-	10.286	6.877	22.877	-	22.877	10.167	12.479	53.296	87.717	0.000	203.699
093: *Multi-Launch Rocket System (MLRS)*	-	5.760	3.943	9.563	-	9.563	5.041	5.040	31.506	65.580	0.000	126.433
789: *Guided MLRS (GMLRS) Rocket P3I**	-	0.000	0.000	0.000	-	0.000	0.000	0.000	17.748	17.927	0.000	35.675
DX8: *HIMARS Product Improvement Program*	-	4.526	2.934	13.314	-	13.314	5.126	7.439	4.042	4.210	0.000	41.591

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2020

A. Mission Description and Budget Item Justification

Program element 0603778A supports development and testing of the Army's rocket launcher fleet, including the Multiple Launch Rocket System (MLRS) launcher and the High Mobility Artillery Rocket System (HIMARS) launcher. MLRS and HIMARS launchers support the Army's number one priority modernization effort, Long Range Precision Fires. Updated launchers are required to fire current and developmental munitions such as the Precision Strike Missile (PrSM) and Extended Range (ER) Guided Multiple Launch Rocket System (GMLRS).

Project 093. The M270A1 Multiple Launch Rocket System (MLRS) launcher is a full-spectrum, combat-proven, all-weather, 24/7 lethal and responsive, precision strike weapon system. MLRS provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. MLRS is a tracked, indirect fire, rocket/missile launcher capable of firing two pods of precision rockets/missiles from the current and emerging Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM), to include the Extended Range (ER) Guided Multiple Launch Rocket System (GMLRS), the Army Tactical Missile System (ATACMS), and the Precision Strike Missile (PrSM). These munitions are capable of engaging targets with precision at ranges in excess of 400 kilometers. Project 093 funds software development, training updates, Assured Positioning, Navigation and Timing (APNT) technology implementation, and integration of satellite communications for the MLRS launcher.

Justification:
FY 2020 Base funding in the amount of $9.563 million for Project 093 continues tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a MLRS launcher. The tactical software is a critical developmental item required to field additional launchers, maintain backward compatibility for current fleet sustainment, and is the first release of government developed software common to both the MLRS and HIMARS launcher. The increase from FY2019 funds additional research and development related to Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications, allowing the MLRS to continue to effectively operate in near peer threat environments. Conducts delta testing of the Improved Armored Cab (IAC) with the new vendor.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army	Date: March 2019
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0603778A *I MLRS Product Improvement Program*

Project DX8. The M142 High Mobility Artillery Rocket System (HIMARS) launcher is a full-spectrum, combat-proven, all-weather, 24/7 lethal and responsive, precision strike weapon system. HIMARS provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. HIMARS is a C-130 or C-17 transportable, wheeled, indirect fire, rocket/missile launcher capable of firing one pod of precision rockets/missiles from the current and emerging Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM), to include the Extended Range (ER) Guided Multiple Launch Rocket System (GMLRS), the Army Tactical Missile System (ATACMS), and the Precision Strike Missile (PrSM). These munitions are capable of engaging targets with precision at ranges in excess of 400 kilometers. Project DX8 funds software development, training updates, and Assured Positioning, Navigation and Timing (APNT) technology implementation for the HIMARS launcher.

Justification:
FY 2020 Base funding in the amount of $13.314 million for Project DX8 continues tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a HIMARS launcher. The tactical software is a critical developmental item required to field additional launchers, maintain backward compatibility for current fleet sustainment, and is the first release of government developed software common to both the MLRS and HIMARS launcher. The increase from FY2019 funds additional research and development related to Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications, allowing the HIMARS to continue to effectively operate in near peer threat environments.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	8.929	8.886	8.877	-	8.877
Current President's Budget	10.286	6.877	22.877	-	22.877
Total Adjustments	1.357	-2.009	14.000	-	14.000
• Congressional General Reductions	-0.007	-0.009			
• Congressional Directed Reductions	-	-2.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.714	-			
• SBIR/STTR Transfer	-0.350	-			
• Adjustments to Budget Years	-	-	14.000	-	14.000

Change Summary Explanation

FY18: The $1.357 million increase in base funding is a result of a decrease of $0.350 million for SBIR/STTR funding and increased funding by $1.714 million to support development and testing of software for the Fire Control System.
FY19: The $2.312 decrease in base funding is a result of Army realignment of funds to higher priority programs.
FY20: The $14.000 million increase in base funding is a result of the increased amount of development and testing with Assured Positioning, Navigation and Timing (APNT) and multiple Fire Control System (FCS) software versions in support of both the MLRS and HIMARS launcher fleets.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) 093 / *Multi-Launch Rocket System (MLRS)*	

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
093: *Multi-Launch Rocket System (MLRS)*	-	5.760	3.943	9.563	-	9.563	5.041	5.040	31.506	65.580	0.000	126.433
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M270A1 Multiple Launch Rocket System (MLRS) launcher is a full-spectrum, combat-proven, all-weather, 24/7 lethal and responsive, precision strike weapon system. MLRS provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. MLRS is a tracked, indirect fire, rocket/missile launcher capable of firing two pods of precision rockets/missiles from the current and emerging Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM), to include the Extended Range (ER) Guided Multiple Launch Rocket System (GMLRS), the Army Tactical Missile System (ATACMS), and the Precision Strike Missile (PrSM). These munitions are capable of engaging targets with precision at ranges in excess of 400 kilometers. Project 093 funds software development, training updates, Assured Positioning, Navigation and Timing (APNT) technology implementation, and integration of satellite communications for the MLRS launcher.

Justification:
FY 2020 Base funding in the amount of $9.563 million for Project 093 continues tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a MLRS launcher. The tactical software is a critical developmental item required to field additional launchers, maintain backward compatibility for current fleet sustainment, and is the first release of government developed software common to both the MLRS and HIMARS launcher. The increase from FY 2019 funds additional research and development related to Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications, allowing the MLRS to continue to effectively operate in near peer threat environments. Conducts delta testing of the Improved Armored Cab (IAC) with the new vendor.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: MLRS Product Improvement Program	5.760	3.784	9.563	-	9.563
Description: The M270A1 MLRS Product Improvement Program provides the preservation of platform viability and readiness to accept technology insertion as capability enhancements are developed and to mitigate obsolescence. Support efforts include: obsolescence mitigation and enhancements for the M993A1 carrier, Fire Control System, Launcher Loader Module and Enhanced Command and Control; development and updating the Fire Control System software to keep pace with changes to the munitions; and performing Command, Control, Communications, Computers and Intelligence (C4I)/interoperability and Information Assurance compliance certification and network interoperability testing. Perform technical assessments and concept studies for the					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** 093 / *Multi-Launch Rocket System (MLRS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
following: obsolescence mitigation, Assured Positioning, Navigation and Timing (APNT), crew protection, automotive and hardware/software enhancements, improving operational timelines and risk reduction. ***FY 2019 Plans:*** Continue tactical launcher software development to support the Fire Control System obsolescence mitigation hardware upgrade required to operate a MLRS launcher and support upgrade and improvements to munitions. ***FY 2020 Base Plans:*** Will continue tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a MLRS launcher. Conduct research and development of Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications. Conduct delta testing of the Improved Armored Cab (IAC) with the new vendor. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increased funding of $5.779 million funds additional research and development of Global Positioning System (GPS) Anti-Jam and Anti-Spoofing capabilities, and integration of satellite communications. This development allows the MLRS Launcher to continue effective operations in near-peer threat environments. Conducts delta testing of the Improved Armored Cab (IAC) with the new vendor.					
Title: FY 2019 SIBR/STTR Transfer ***Description:*** Account for the FY2019 SBIR / STTR Adjustment ***FY 2019 Plans:*** FY 2019 SBIR / STTR Adjustment ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease in FY 2020 due to SBIR / STTR transfer in FY 2019	-	0.159	-	-	-
Accomplishments/Planned Programs Subtotals	5.760	3.943	9.563	-	9.563

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
• C67500: *MLRS Mods*	138.235	478.998	0.000	387.019	387.019	384.859	277.928	207.388	34.518	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** 093 / *Multi-Launch Rocket System (MLRS)*

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

Remarks

C67500 is Budget Line Item Number (BLIN) 22 funded in the Missiles Procurement Army (MIPA or MSLS) appropriation.

D. Acquisition Strategy

The M270A1 MLRS Product Improvement Program performs development efforts required to address emerging requirements. Emerging requirements include, but are not limited to, updates to address emerging threats of the launcher organic version 8.x software, reacting to system changes driven by policy and emerging requirements, and maintaining architectural compatibility. Update software and hardware for communications and munitions to maintain compatibility and operational viability against a near-peer adversary.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) 093 / *Multi-Launch Rocket System (MLRS)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Program Management	Various	PFRMS Project Office : Redstone Arsenal, AL	8.955	-		-		-		-		-	0.000	8.955	-
FY 2019 SBIR / STTR	Various	Various : Various	-	-		0.159		-		-		-	0.000	0.159	-
		Subtotal	8.955	-		0.159		-		-		-	0.000	9.114	N/A

Remarks

Government Program Management funding was transferred to the Operations and Maintenance, Army (OMA) appropriation.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Government Agencies OGA	MIPR	FT SILL OK, CECOM-NJ AMRDEC-RSA AL, : various	17.108	-		-		-		-		-	0.000	17.108	-
MLRS IAC	C/CPFF	Lockheed Martin : Grand Prairie, TX	30.498	-		-		-		-		-	0.000	30.498	-
MLRS FCS Development	SS/CR	Lockheed Martin : Grand Prairie, TX	70.200	-		-		-		-		-	0.000	70.200	-
Organic Software Development	MIPR	AMRDEC : Redstone Arsenal, AL	-	5.760	Apr 2018	3.784	May 2019	8.314	Dec 2019	-		8.314	Continuing	Continuing	Continuing
Risk Reduction Effort: Common Fire Control System	SS/CR	Lockheed Martin : Grand Prairie, TX	21.900	-		-		-		-		-	0.000	21.900	-
Risk Reduction Effort: Hulls	MIPR	Red River Army Depot : Red River Army Depot, TX	3.200	-		-		-		-		-	0.000	3.200	-
		Subtotal	142.906	5.760		3.784		8.314		-		8.314	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) 093 / *Multi-Launch Rocket System (MLRS)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Organic (government developed, maintained, and owned) software development includes additional research and development related to Fire Control System obsolescence, Assured Position, Navigation and Timing (A/PNT) activities such as Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	Various	Multiple : Multiple	4.834	-		-		-		-		-	0.000	4.834	-
		Subtotal	4.834	-		-		-		-		-	0.000	4.834	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support, Joint Interoperability Test Certificate	MIPR	CTSF, Ft. Hood : Texas	10.712	-		-		-		-		-	0.000	10.712	-
Test Support	MIPR	Ft Hood, TX, ATEC, APG, MD, WSMR, RTC, : RSA: Various	-	-		-		1.249	Nov 2019	-		1.249	Continuing	Continuing	Continuing
		Subtotal	10.712	-		-		1.249		-		1.249	Continuing	Continuing	N/A

Remarks

Test support includes two items. First is to validate Improved Armored Cab (IAC) design modifications to address limitations found during original live fire testing and validate the new manufacturer. Second test item is software qualification testing for the Fire Control System.

	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	167.407	5.760		3.943		9.563		-		9.563	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) 093 / *Multi-Launch Rocket System (MLRS)*	

	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

Acronyms:
AMRDEC - Aviation and Missile Research Development and Engineering Center;
PFRMS - Precision Fires Rocket and Missile Systems;
CTSF - Central Technical Support Facility;
ATEC - US Army Test and Evaluation Command;
APG MD - Aberdeen Proving Ground, Maryland;
WSMR - White Sands Missile Range;
RTC RSA - Redstone Test Center, Redstone Arsenal, Alabama

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** 093 / *Multi-Launch Rocket System (MLRS)*

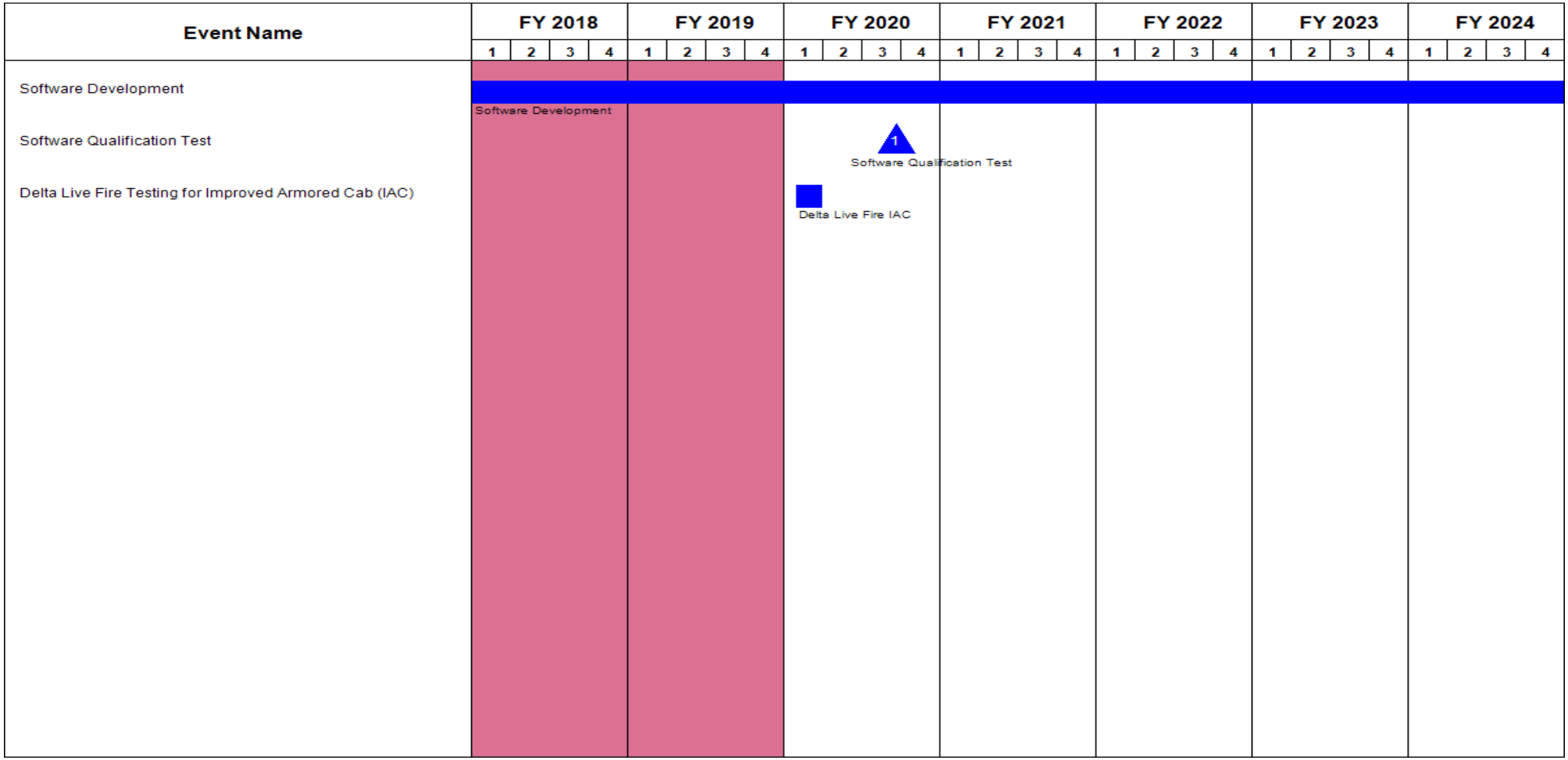

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** 093 / *Multi-Launch Rocket System (MLRS)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Software Development	1	2018	4	2024
Software Qualification Test	3	2020	3	2020
Delta Live Fire Testing for Improved Armored Cab (IAC)	1	2020	1	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) DX8 / *HIMARS Product Improvement 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
DX8: *HIMARS Product Improvement Program*	-	4.526	2.934	13.314	-	13.314	5.126	7.439	4.042	4.210	0.000	41.591
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The M142 High Mobility Artillery Rocket System (HIMARS) launcher is a full-spectrum, combat-proven, all-weather, 24/7 lethal and responsive, precision strike weapon system. HIMARS provides critical missile precision strike, operational shaping fires, counterfire, and close support destructive and suppressive fires. HIMARS is a C-130 or C-17 transportable, wheeled, indirect fire, rocket/missile launcher capable of firing one pod of precision rockets/missiles from the current and emerging Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM), to include the Extended Range (ER) Guided Multiple Launch Rocket System (GMLRS), the Army Tactical Missile System (ATACMS), and the Precision Strike Missile (PrSM). These munitions are capable of engaging targets with precision at ranges in excess of 400 kilometers. Project DX8 funds software development, training updates, and Assured Positioning, Navigation and Timing (APNT) technology implementation for the HIMARS launcher.

Justification:
FY 2020 Base funding in the amount of $13.314 million for Project DX8 continues tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a HIMARS launcher. The tactical software is a critical developmental item required to field additional launchers, maintain backward compatibility for current fleet sustainment, and is the first release of government developed software common to both the MLRS and HIMARS launcher. The increase from FY 2019 funds additional research and development related to Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications, allowing the HIMARS to continue to effectively operate in near peer threat environments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: MLRS Production Improvement Program (PIP)-HIMARS PIP	4.526	2.790	13.314	-	13.314
Description: The HIMARS Product Improvement Program provides the preservation of platform viability and readiness to accept technology insertion as capability enhancements are developed and to mitigate obsolescence. Support efforts include: obsolescence mitigation and enhancements for the truck, Fire Control System, Launcher Loader Module and Enhanced Command and Control; development and updating the Fire Control System software to keep pace with changes to the munitions; and performing Command, Control, Communications, Computers and Intelligence (C4I)/interoperability and Information Assurance compliance certification and network interoperability testing. Perform technical assessments and concept studies for the following: obsolescence mitigation, Assured Positioning, Navigation and Timing (APNT), crew protection, automotive and hardware/software enhancements, improving operational timelines and risk reduction.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** DX8 / *HIMARS Product Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY 2019 Plans: Continue tactical launcher software development to support the Fire Control System obsolescence mitigation hardware upgrade required to operate a HIMARS launcher and support upgrade and improvements to munitions. ***FY 2020 Base Plans:*** Will continue tactical launcher software development and testing to support the Fire Control System (FCS) obsolescence mitigation hardware upgrade required to operate a HIMARS launcher. Conduct research and development of Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increased funding of $10.524 million funds additional research and development of Global Positioning System (GPS) Anti-Jam and Anti-Spoofing capabilities, and integration of satellite communications. This development allows the HIMARS Launcher to continue effective operations in near-peer threat environments.					
Title: FY 2019 SBIR / STTR Transfer ***Description:*** Account for the FY 2019 SBIR / STTR Adjustment ***FY 2019 Plans:*** FY 2019 SBIR / STTR Adjustment ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease in FY 2020 due to SBIR / STTR transfer in FY 2019	-	0.144	-	-	-
Accomplishments/Planned Programs Subtotals	4.526	2.934	13.314	-	13.314

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
• C67501: *HIMARS Modifications*	9.566	10.196	0.000	12.483	12.483	6.089	7.300	9.711	17.421	Continuing	Continuing
• C02901: *High Mobility Artillery Rocket System (HIMARS)*	238.000	171.138	0.000	-	0.000	-	89.077	41.274	-	0.000	539.489

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** DX8 / *HIMARS Product Improvement Program*

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

Remarks

C67501 (Budget Line Item Number 23) and C02091 (Budget Line Item Number 13) are funded in the Missiles Procurement Army (MIPA or MSLS) appropriation.

D. Acquisition Strategy

The M142 HIMARS Product Improvement Program performs development efforts required to address emerging requirements. Emerging requirements include, but are not limited to, updates to address emerging threats of the launcher organic version 8.x software, reacting to system changes driven by policy and emerging requirements, and maintaining architectural compatibility. Update software and hardware for communications and munitions to maintain compatibility and operational viability against a near-peer adversary.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) DX8 / *HIMARS Product Improvement Program*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Program Management	Various	PFRMS Project Office : Redstone Arsenal, AL	0.817	-		-		-		-		-	0.000	0.817	-
FY 2019 SBIR / STTR	Various	Various : Various	-	-		0.144		-		-		-	0.000	0.144	-
		Subtotal	0.817	-		0.144		-		-		-	0.000	0.961	N/A

Remarks

Government Program Management funding was transferred to the Operations and Maintenance, Army (OMA) appropriation.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Government Agencies (OGA)	MIPR	AMCOM, GSA, RSA : Various	3.318	-		-		-		-		-	0.000	3.318	-
Organic Software Development	MIPR	AMRDEC : Redstone Arsenal, AL	6.863	4.526	Apr 2018	2.690	Apr 2019	12.065	Apr 2020	-		12.065	Continuing	Continuing	Continuing
		Subtotal	10.181	4.526		2.690		12.065		-		12.065	Continuing	Continuing	N/A

Remarks

Organic (government developed, maintained, and owned) software development includes additional research and development related to Fire Control System obsolescence, Assured Position, Navigation and Timing (A/PNT) activities such as Global Positioning System (GPS) Anti-Jam, Anti-Spoofing capabilities, and integration of satellite communications.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	Ft Hood, TX, ATEC, APG, MD, WSMR, RTC, RSA : Various	3.459	-		0.100	Jun 2019	1.249	Jun 2020	-		1.249	Continuing	Continuing	Continuing
		Subtotal	3.459	-		0.100		1.249		-		1.249	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0603778A / *MLRS Product Improvement Program*	Project (Number/Name) DX8 / *HIMARS Product Improvement Program*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks															
Test support includes software qualification testing for the Fire Control System.															

	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	14.457	4.526		2.934		13.314		-		13.314	Continuing	Continuing	N/A

Remarks

AMRDEC - Aviation and Missile Research Development and Engineering Center;
PFRMS - Precision Fires Rocket and Missile Systems;
CTSF - Central Technical Support Facility;
ATEC - US Army Test and Evaluation Command;
APG MD - Aberdeen Proving Ground, Maryland;
WSMR - White Sands Missile Range;
RTC RSA - Redstone Test Center, Redstone Arsenal, Alabama

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** DX8 / *HIMARS Product Improvement Program*

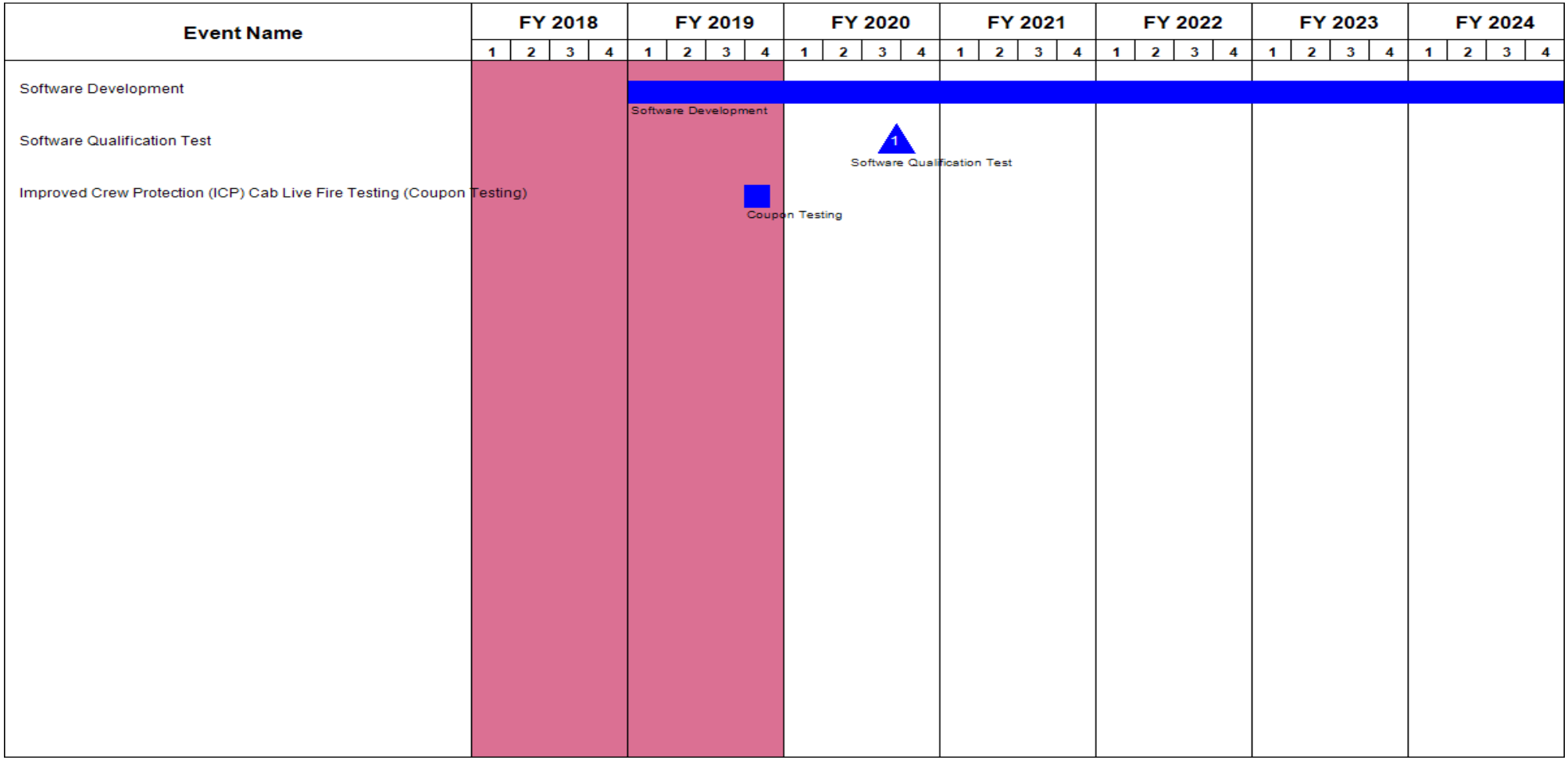

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0603778A / *MLRS Product Improvement Program*	**Project (Number/Name)** DX8 / *HIMARS Product Improvement Program*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Software Development	1	2019	4	2024
Software Qualification Test	3	2020	3	2020
Improved Crew Protection (ICP) Cab Live Fire Testing (Coupon Testing)	4	2019	4	2019