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 4: *Advanced Component Development & Prototypes (ACD&P)*					**R-1 Program Element (Number/Name)** PE 0604021A I *Electronic Warfare Technology Maturation (MIP)*						

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	-	0.000	0.000	18.043	-	18.043	18.800	0.000	0.000	0.000	0.000	36.843
AW7: *Electronic Warfare Technology Maturation (MIP)*	-	0.000	0.000	18.043	-	18.043	18.800	0.000	0.000	0.000	0.000	36.843

Note
This program is a new start in FY 2020.

A. Mission Description and Budget Item Justification

Terrestrial Layer System (TLS) is a new start effort in FY 2020 to provide Army maneuver forces integrated Signals Intelligence (SIGINT), Electronic Warfare (EW), and offensive Cyber-enabling integrated solution to support Multi Domain operation capability gaps and provide Force Protection, Situational Development, and Information Superiority to the maneuver forces. TLS is a dedicated, all weather, 24/7, ground-based tactical system providing Signals Intelligence (SIGINT), Electronic Warfare Support (ES), Electronic Attack (EA) and Cyber enabling capabilities to support the Brigade Combat Team (BCT) and Expeditionary-Military Intelligence Brigade (E-MIB) commanders. TLS provides Indications and Warnings, Force Protection and Situational Awareness to influence the commander's decision cycle, improve targeting timeliness and accuracy, and provide the maneuver commander with electronic attack and offensive cyber warfare options to deny, degrade, disrupt, or otherwise manipulate the targeted force. TLS employs technologically advanced systems with a modular open-system approach for dismounted, vehicle mounted, and extended range operations that can be efficiently sustained and effectively upgraded to provide capabilities against changing near peer and emerging threats.

B. Program Change Summary ($ in Millions)

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	18.043	-	18.043
Total Adjustments	0.000	0.000	18.043	-	18.043
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	18.043	-	18.043

Change Summary Explanation

This program is a new start in FY 2020.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 I 4				**R-1 Program Element (Number/Name)** PE 0604021A I Electronic Warfare Technology Maturation (MIP)				**Project (Number/Name)** AW7 I Electronic Warfare Technology Maturation (MIP)			
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**
AW7: Electronic Warfare Technology Maturation (MIP)	-	0.000	0.000	18.043	-	18.043	18.800	0.000	0.000	0.000	0.000	36.843
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

 PE 0604021A and Project AW7 for Terrestrial Layer System (TLS) is a new start in FY 2020.

A. Mission Description and Budget Item Justification

 This is a new start in FY 2020. Terrestrial Layer System (TLS) is the overarching effort to provide Army maneuver forces integrated Intelligence, Electronic Warfare, and Cyber Warfare-enabling Capabilities. TLS is a dedicated, all weather, 24/7, ground-based tactical system providing Signals Intelligence (SIGINT), Electronic Warfare Support (ES), Electronic Attack (EA) and Cyber enabling capabilities to support the Brigade Combat Team (BCT) and Expeditionary-Military Intelligence Brigade (E-MIB) commanders. TLS provides, but is not limited to; Indications and Warnings, Force Protection and Situational Awareness to influence the commander's decision cycle, improves targeting timeliness and accuracy, and provides the maneuver commander with electronic attack and offensive cyber warfare options to deny, degrade, disrupt, or otherwise manipulate the targeted force. TLS employs technologically advanced systems with a modular open-system approach for dismounted, vehicle mounted, and extended range operations that can be efficiently sustained and effectively upgraded over its lifecycle to incorporate emerging technologies in order to pace near peer and emerging threats.

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2018**	**FY 2019**	**FY 2020**
Title: Technical / Program Management	-	-	2.282
Description: Funds will provide for technical engineering and program management. **FY 2020 Plans:** FY 2020 technical engineering and program management support for TLS. **FY 2019 to FY 2020 Increase/Decrease Statement:** FY 2020 is the first year funding is programmed to support the TLS effort.			
Title: Systems Engineering and Component Prototyping	-	-	15.761
Description: Funds will provide for, but are not limited to evaluation, development and engineering of component level technologies to include antennas, radios, software architecture and other Signals Intelligence (SIGINT), Electronic Warfare Support (ES), Electronic Attack (EA) and Cyber enabling components to mature technical feasibility and reduce Critical Technology Element (CTE) risks. Funds will support, but are not limited to the development of system level design and integration to reduce Size, Weight and Power (SWaP) in order to mature components into an emerging Program of Record (PoR) level			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		**Date:** March 2019
Appropriation/Budget Activity 2040 *I* 4	**R-1 Program Element (Number/Name)** PE 0604021A *I Electronic Warfare Technology Maturation (MIP)*	**Project (Number/Name)** AW7 *I Electronic Warfare Technology Maturation (MIP)*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2018**	**FY 2019**	**FY 2020**
technology maturation level. Additionally, funding will support continuing component and system improvements through the establishment of a developmental test environment. ***FY 2020 Plans:*** Conduct analysis of SIGINT, ES, EA and cyber enabling components and system alternatives. Award contract agreements to mature critical technologies, develop sub-systems, components and reduce component integration risks in a System solution that can be evaluated for affordability, feasibility, and technical maturity; all of which will reduce program technical and cost risks. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2020 is the first year funding is programmed to support the TLS effort.			
Accomplishments/Planned Programs Subtotals	-	-	18.043

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
• FJ5: *Terrestrial Layer System (MIP)*	-	-	0.000	-	0.000	37.000	51.300	21.000	12.100	0.000	121.400

Remarks

D. Acquisition Strategy

A competitive acquisition approach for component development and prototyping is planned for TLS using a tailored acquisition strategy to rapidly deliver an initial integrated ground intelligence, electronic warfare and cyber capability to the Army. These efforts will be used, but are not limited to identify, develop, prototype, evaluate, analyze, and demonstrate potential enhanced capabilities and extended range alternative solutions. These efforts will quantify the respective maturity and effectiveness to mitigate capability gaps against changing near peer representative enemy target sets and operational scenarios. Enhanced capability, extended range and other technologies to provide overmatch capabilities will be evaluated for merit and will provide increased performance for production of TLS systems in FY2022.The TLS program will leverage all authorities to accelerate delivery.

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 / 4	**R-1 Program Element (Number/Name)** PE 0604021A / Electronic Warfare Technology Maturation (MIP)	**Project (Number/Name)** AW7 / Electronic Warfare Technology Maturation (MIP)

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
Systems Engineering and Prototyping	C/Various	TBD : TBD	-	-		-		15.761	Feb 2020	-		15.761	0.000	15.761	-
Subtotal			-	-		-		15.761		-		15.761	0.000	15.761	N/A

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
Technical / Program Management	C/CPFF	AASKI Technology : Tinton Falls, NJ	-	-		-		1.141	Nov 2019	-		1.141	0.000	1.141	-
Technical / Program Management	MIPR	Various Matrix Support Organizations : Abberdeen Proving Grounds, MD	-	-		-		1.141	Nov 2019	-		1.141	0.000	1.141	-
Subtotal			-	-		-		2.282		-		2.282	0.000	2.282	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	18.043	-	18.043	0.000	18.043	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army		**Date:** March 2019
Appropriation/Budget Activity 2040 *I* 4	**R-1 Program Element (Number/Name)** PE 0604021A *I Electronic Warfare Technology Maturation (MIP)*	**Project (Number/Name)** AW7 *I Electronic Warfare Technology Maturation (MIP)*

Exhibit R-4A, **RDT&E Schedule Details:** PB 2020 Army		**Date:** March 2019
Appropriation/Budget Activity 2040 *I* 4	**R-1 Program Element (Number/Name)** PE 0604021A *I Electronic Warfare Technology Maturation (MIP)*	**Project (Number/Name)** AW7 *I Electronic Warfare Technology Maturation (MIP)*

Schedule Details

Events	Start		End	
	Quarter	**Year**	**Quarter**	**Year**
TLS Competitive Component Prototying Award(s)	2	2020	2	2020
TLS System Engineering and Prototyping	2	2020	2	2021
TLS Integration/Production Contract Award	2	2021	2	2021
TLS Integration	2	2021	2	2022
TLS Rapid Production/Fielding	2	2022	2	2027