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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	3.362	3.761	3.879	-	3.879	3.922	3.965	4.008	4.051	Continuing	Continuing
RH5: TROJAN - RH12	-	3.362	3.761	3.879	-	3.879	3.922	3.965	4.008	4.051	Continuing	Continuing

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

TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remotable, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time Signals Intelligence (SIGINT) training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	3.362	3.761	3.862	-	3.862
Current President's Budget	3.362	3.761	3.879	-	3.879
Total Adjustments	0.000	0.000	0.017	-	0.017
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	0.017	-	0.017

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<b><u>Change Summary Explanation</u></b> Increased funding due to revised economic assumptions.		

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12				<b>Project (Number/Name)</b> RH5 / TROJAN - RH12			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RH5: TROJAN - RH12	-	3.362	3.761	3.879	-	3.879	3.922	3.965	4.008	4.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

TROJAN research and development supports TROJAN Next Generation (TROJAN NexGEN), formerly TROJAN Classic XXI (TCXXI), future capabilities to fulfill the Army's need for worldwide, deployable, remorable, intelligence, surveillance and reconnaissance support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of Army Modernization and Army Force Generation, TROJAN NexGEN will provide soldiers with a real-world, hands-on, live and near-real time SIGINT training environment sustaining, maintaining and enhancing their military occupational specialty proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure, collaborative architecture.

A key factor for future force success is the ability to collect, process, and use information about an adversary while preventing similar information from being disclosed. TROJAN NexGEN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN NexGEN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. Engineers test and evaluate new digital intelligence collection, processing and dissemination technology using the fielded TROJAN NexGEN systems prior to the acquisition of those technologies. As part of the objective intelligence architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN NexGEN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threat.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Integrate Direction Finding and geo-location	1.188	1.200	1.253
<b>Description:</b> Integrate Direction Finding (DF) and geolocation (GL) technologies into TROJAN Remote Receiving Groups.			
<b>FY 2023 Plans:</b> Continuously adapt/improve the latest Direction Finding (DF) and geolocation technologies for integration into TROJAN NexGEN systems in accordance with Joint Interface Control Document (JICD) 4.2., and JICD 4.2 ELINT (JEL). Utilize field based risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise. Continue to research and test for the integration of Electronics Intelligence (ELINT) capabilities. Resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers accounted for in the Integrate Direction Finding (DF) and geolocation (GL) project.			
<b>FY 2024 Plans:</b> Will continuously adapt/improve the latest Direction Finding (DF) and geolocation technologies for integration into TROJAN NexGEN systems in accordance with Joint Interface Control Document (JICD) 4.2., and JICD 4.2 ELINT (JEL). Will utilize field			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12	<b>Project (Number/Name)</b> RH5 / TROJAN - RH12		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>based risk reduction exercises to test and evaluate integrated technologies of the overall TROJAN Intelligence, Surveillance, and Reconnaissance (ISR) Enterprise. Will continue to research and test for the integration of Electronics Intelligence (ELINT) capabilities. Will resource labor for one MAT DEV technologist, two MAT DEV software engineers and two MAT DEV HW engineers accounted for in the Integrate Direction Finding (DF) and geolocation (GL) project.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding changes reflect planned lifecycle of this effort.</p>				
<p><b>Title:</b> Enable assured communications for the TROJAN Network architecture (formerly Improve security of the TROJAN Network architecture).</p> <p><b>Description:</b> Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence network throughput.</p> <p><b>FY 2023 Plans:</b> Ongoing effort of transitioning Government off the shelf (GOTS) / Commercial of the shelf (COTS) solutions enabling communication in an anti-access/area denial environment to TROJAN production systems. Continue to research, evaluate, integrate and test with technologies to enable redundant communications paths and anti-jam technologies based current threats. This effort nears completion in FY23 with ongoing work in the outyears.</p> <p><b>FY 2024 Plans:</b> Will continue ongoing effort of transitioning Government off the shelf (GOTS) / Commercial of the shelf (COTS) solutions enabling communication in an anti-access/area denial environment to TROJAN production systems. Will continue to research, evaluate, integrate and test with technologies to enable redundant communications paths and anti-jam technologies based current threats.</p>		0.500	0.300	0.300
<p><b>Title:</b> Integrate and test specialized hardware/software</p> <p><b>Description:</b> Integrate and test specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Resource development of GLAIVE software (SW). Integrated several new National Security Agency (NSA) SW packages.</p> <p><b>FY 2023 Plans:</b> Continue integration and testing of specialized hardware/software for classified pre-processing and detection of new signals of interest. Continue to resource development, integration and test of GOTS/COTS software. Continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Continue efforts to integrate JICD 4.2 across all platforms. Migration of NexGEN Family of system capabilities from rack based servers and receivers to a C5ISR/EW Modular Open-Source Suite of Standards (CMOSS) configuration to reduce system SWaP.</p> <p><b>FY 2024 Plans:</b></p>		0.704	1.161	1.196

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>Will continue integration and testing of specialized hardware/software for classified pre-processing and detection of new signals of interest. Will continue to resource development, integration and testing of GOTS/COTS software. Will continue efforts to develop TROJAN Intelligence Surveillance Reconnaissance enterprise. Will continue efforts to integrate JICD 4.2 across all platforms. Migration of NexGEN Family of system capabilities from rack based servers and receivers to a C5ISR/EW Modular Open-Source Suite of Standards (CMOSS) configuration to reduce system Size Weight and Power (SWaP).</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding changes reflect planned lifecycle of this effort.</p>			
<p><b>Title:</b> Research and testing of receivers</p> <p><b>Description:</b> Research and testing of receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using Digital System Processing (DSP) and Software Defined Radio (SDR) technologies.</p> <p><b>FY 2023 Plans:</b> Continue research and testing of receiver packages for fixed and transportable TROJAN systems to detect and process non-standard modulations using DSP and SDRs. Integrate receiver packages to enable additional and wideband frequency ranges for COTS/GOTS Software Defined Radios. Continue to utilize COTS/GOTS hardware and software frameworks to enable multiple SDRs to cooperate on a common backplane; which also includes DSP processing framework (Photon), receiver hardware resource manager, and single user interface application.</p> <p><b>FY 2024 Plans:</b> Will continue research and testing of receiver packages for fixed and transportable TROJAN systems to detect and process non-standard modulations using DSP and SDRs. Will integrate receiver packages to enable additional and wideband frequency ranges for COTS/GOTS Software Defined Radios. Will continue to utilize COTS/GOTS hardware and software frameworks to enable multiple SDRs to cooperate on a common backplane; which also includes DSP processing framework (Photon), receiver hardware resource manager, and single user interface application.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Increase reflects planned lifecycle effort.</p>	0.970	1.100	1.130
<b>Accomplishments/Planned Programs Subtotals</b>	3.362	3.761	3.879

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• BA0326: TROJAN	30.828	20.562	30.649	-	30.649	29.783	33.293	40.034	17.164	0.000	202.313
<b>Remarks</b>											

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Army **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12	<b>Project (Number/Name)</b> RH5 / TROJAN - RH12
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**D. Acquisition Strategy**

The Acquisition Strategy for the TROJAN NexGEN Systems supported by TROJAN RDT&E is to adapt and leverage from Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) products. Additionally, the Acquisition Strategy leverages off of development by DoD and other Government agencies to the greatest extent possible. TROJAN RDT&E is used to fund the development of enhancing these technologies to meet specific user requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12	<b>Project (Number/Name)</b> RH5 / TROJAN - RH12
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrate Direction Finding and geo-location	Various	APG : MD	8.174	1.188	Oct 2021	1.200	Oct 2022	1.253	Oct 2023	-		1.253	Continuing	Continuing	-
Enable assured communications for the TROJAN Network Architecture	Various	APG : MD	7.942	0.500	Oct 2021	0.300	Oct 2022	0.300	Oct 2023	-		0.300	Continuing	Continuing	-
Research and testing of Receivers	Various	APG : MD	3.780	0.970	Oct 2021	1.100	Oct 2022	1.130	Oct 2023	-		1.130	Continuing	Continuing	-
<b>Subtotal</b>			19.896	2.658		2.600		2.683		-		2.683	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integration and Testing of Hardware/Software	Various	APG : MD	8.641	0.704	Oct 2021	1.161	Oct 2022	1.196	Oct 2023	-		1.196	0.000	11.702	Continuing
<b>Subtotal</b>			8.641	0.704		1.161		1.196		-		1.196	0.000	11.702	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			28.537	3.362	3.761	3.879	-	3.879	Continuing	Continuing	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12	<b>Project (Number/Name)</b> RH5 / TROJAN - RH12
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Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Follow on Hardware, Software and Systems Development	Development Efforts																											

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Army **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0303032A / TROJAN - RH12	<b>Project (Number/Name)</b> RH5 / TROJAN - RH12
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Hardware, Software and Systems Development	1	2014	4	2018
Follow on Hardware, Software and Systems Development	1	2019	4	2023