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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	146.300	-	146.300	80.864	33.074	1.653	0.000	Continuing	Continuing
FJ8: Assured Positioning, Navigation and Timing (PNT)	-	0.000	0.000	59.058	-	59.058	25.499	10.350	0.000	0.000	Continuing	Continuing
FJ9: Dismounted PNT	-	0.000	0.000	15.989	-	15.989	3.060	0.550	0.000	0.000	Continuing	Continuing
FK1: PSEUDOLITES PNT	-	0.000	0.000	38.302	-	38.302	18.106	6.529	0.000	0.000	Continuing	Continuing
FK2: MOUNTED PNT	-	0.000	0.000	22.816	-	22.816	14.698	7.594	0.000	0.000	Continuing	Continuing
FK3: ANTI-JAM ANTENNA PNT	-	0.000	0.000	10.135	-	10.135	19.501	8.051	1.653	0.000	Continuing	Continuing

## Note

This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A transitions from PE 0604120A beginning in FY19.

Program Element (PE) 0604120A project ED5 transitions to PE 1206120A project FJ8 beginning in FY19.  
Program Element (PE) 0604120A project EH8 transitions to PE 1206120A project FJ9 beginning in FY19.  
Program Element (PE) 0604120A project EH9 transitions to PE 1206120A project FK1 beginning in FY19.  
Program Element (PE) 0604120A project EJ2 transitions to PE 1206120A project FK2 beginning in FY19.  
Program Element (PE) 0604120A project EJ3 transitions to PE 1206120A project FK3 beginning in FY19.

## A. Mission Description and Budget Item Justification

Assured Positioning, Navigation and Timing (PNT) will provide the Army's ground maneuver forces access to trusted PNT information under conditions where space-based PNT Global Positioning System (GPS) may be limited or denied. Joint Requirements Oversight Council Memo (JROCM) 049-10, dated 05 Apr 2010, approved the Positioning, Navigation and Timing Assurance Initial Capabilities Document and designated the Army as the Lead Component for Assured PNT. The Material Development Decision (MDD) was approved on 30 Jul 2013. The Assured PNT draft Capabilities Development Document was validated by the Army Requirements Oversight Council (AROC) on 28 Jul 2014.

PNT is a critical enabler of many Army systems. The current GPS capability is a fixed frequency system vulnerable to current and emerging threats, and field conditions (e.g. urban, dense vegetation), which means Warfighter assured access and integrity to PNT is not guaranteed. This situation degrades mission performance to an unacceptable level. Therefore, current Army systems cannot operate at the required PNT Assurance Levels with GPS alone.

Assured PNT is a system of systems consisting of one project (FJ8) Assured PNT and four separate and interdependent PNT products; (FJ9) Dismounted A-PNT System, (FK1) Pseudolite, (FK2) Mounted A-PNT System, and (FK3) Anti-Jam Antenna System (AJAS). These interdependent PNT products assure access to and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	
<p>integrity of PNT information. Each product provides a degree of standalone capability that can be leveraged across the solutions and enterprise enablers to raise the capabilities in all environments and across all formations and warfighting functions. Program Manager (PM) PNT manages these four products (Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and AJAS) constructed to develop, test, field, and sustain the A-PNT materiel solution.</p> <p>The overall mission of PM PNT also includes experimentation and demonstration activities aligned with the Secretary of the Army and Chief Staff of the Army modernizations areas. The final acquisition and contracting strategy are under development.</p> <p>Assured PNT consists of:</p> <p>(FJ8) - The Assured PNT funding line originally represented the entire program prior to breaking into four separate funding lines. The FY17-FY22 funding is for PNT System of Systems Architecture (SOSA) Testing and Resiliency and Software Assurance Modification (RSAM) to legacy GPS systems, and enhancements to Army PNT Enterprise Enablers and capabilities.</p> <p>(FJ9) - The Dismounted Assured Positioning, Navigation and Timing (PNT) System is a Size, Weight, Power, and Cost (SWAP-C) optimized military Global Positioning System (GPS) and non-GPS sensor suite that acquires and distributes trusted PNT data to soldier-borne systems.</p> <p>(FK1) - The Pseudolite system provides area protection and PNT Assurance in GPS denied environments by providing terrestrial radio navigation (GPS-like) service in electronically or physically challenged environments using a higher power signal.</p> <p>(FK2) - The Mounted Assured PNT System fuses military GPS with physics based sensors and timing technology to acquire and distribute secure trusted PNT data to tactical client systems on vehicular and watercraft platforms.</p> <p>(FK3) - The Anti-Jam Antenna Systems (AJAS) provides GPS signal point protection and PNT Assurance in challenged environments through Anti-Jam technologies. AJAS enables tactical capabilities through assured signal acquisition in challenged environments.</p> <p>FY 2019 Base funds in the total amount of \$146.300 million are provided to continue the development of the Assured PNT program. The FJ8 funding line accounts for \$59.058 million for PNT System of Systems Architecture (SOSA) Testing, Resiliency and Software Assurance Modification (RSAM) and enhancements to Army PNT enablers and capabilities. The FJ9 funding line accounts for \$15.989 million to complete risk reduction efforts for the Dismounted A-PNT System. The FK1 funding line accounts for \$38.302 million for the completion of the Technology Maturation and Risk Reduction phase for Pseudolite. The FK2 funding line accounts for \$22.816 million to complete risk reduction efforts for the Mounted Assured PNT System. The FK3 funding line accounts for \$10.135 million to complete risk reduction efforts for the AJAS.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	146.300	-	146.300
Total Adjustments	0.000	0.000	146.300	-	146.300
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	146.300	-	146.300
Change Summary Explanation					
RDT&E funding increased from \$0.0 million in FY2018 to \$146.300 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A transitions from PE 0604120A beginning in FY19.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FJ8 / Assured Positioning, Navigation and Timing (PNT)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FJ8: Assured Positioning, Navigation and Timing (PNT)	-	0.000	0.000	59.058	-	59.058	25.499	10.350	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, Program Element (PE) 1206120A project FJ8 transitioned from PE 0604120A project ED5 beginning in FY19.												
A. Mission Description and Budget Item Justification Assured positioning, navigation and timing (PNT) will provide the Army's ground maneuver forces access to trusted PNT information under conditions where space-based PNT Global Positioning System (GPS) may be limited or denied. Joint Requirements Oversight Council Memo (JROCM) 049-10, dated 5 Apr 2010, approved the Positioning, Navigation and Timing Assurance Initial Capabilities Document and designated the Army as the Lead Component for Assured PNT. The Material Development Decision (MDD) was approved on 30 Jul 2013. The Assured PNT draft Capabilities Development Document was validated by Army Requirements Oversight Council (AROC) on 28 Jul 2014.												
FY 2019 Base funds in the amount of \$59.058 million are to support PNT System of Systems Architecture (SOSA) Testing and Resiliency and Software Assurance Modification (RSAM) and enhancements to Army PNT Enterprise Enablers and capabilities. The U.S. Army is required to operate in an ever evolving GPS contested environment. The PNT SOSA Testing will allow for Army systems to test developed RSAM software and enable actions to be taken to ensure full operation of Army Forces through RSAM field patches and Assured PNT.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: PNT System of System (SOSA) Testing and Resiliency and Software Assurance Modification (RSAM)									-	-	35.435	
Description: The effort supports testing of Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) of Army PNT capabilities and Resiliency and Software Assurance Modification (RSAM).												
FY 2019 Plans: PNT SOSA testing and RSAM will complete software development for Defense Advanced GPS Receiver (DAGR) and continue software development for Ground Based GPS Receiver Applications Module (GB-GRAM), to include engineering build testing, formal qualification testing, and risk mitigation efforts for platforms utilizing DAGR and GBGRAM. In addition, DAGR RSAM integration testing efforts will be performed in association with relevant platforms.												
FY 2018 to FY 2019 Increase/Decrease Statement:												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Army		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FJ8 / Assured Positioning, Navigation and Timing (PNT)	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
RDT&E funding increased from \$0.0 million in FY2018 to \$35.435 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FJ8 transitioned from PE 0604120A project ED5 beginning in FY19.			
<b>Title:</b> Assured Positioning, Navigation and Timing Enterprise Enablers  <b>Description:</b> This effort will refine Assured PNT Enterprise Enabler requirements and, in appropriate cases, conduct prototyping and technical demonstrations including Alternative Navigation and net-enabled GPS solutions that leverage industry, academia, and the warfighter in an iterative process.  <b>FY 2019 Plans:</b> FY2019 Base funds will support experimentation, prototyping and technical demonstrations including Alternative Navigation and net-enabled GPS solutions and Assured PNT Enterprise Enablers to inform requirements development and mitigate threat operations.  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> RDT&E funding increased from \$0.0 million in FY2018 to \$23.623 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FJ8 transitioned from PE 0604120A project ED5 beginning in FY19.		-	-
<b>Accomplishments/Planned Programs Subtotals</b>		-	59.058
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b> The planned acquisition strategy for Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) testing and Resiliency and Software Assurance Modification (RSAM) implementation is to award sole source contracts to the original equipment manufacturers and leverage the Communications Electronics Research Development Engineering Center (CERDEC) to develop and evaluate solutions to enhance the resiliency of Global Positioning System (GPS)-dependent systems operating in evolving contested environments. PNT SOSA testing and RSAM implementation will complete software development for Defense Advanced GPS Receiver (DAGR) and Ground Based GPS Receiver Applications Module (GB-GRAM), to include engineering build testing and formal qualification testing, as well as integration and integration testing, for platforms utilizing DAGR and GB-GRAM engineering builds.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	Project (Number/Name) FJ8 / Assured Positioning, Navigation and Timing (PNT)
The Assured PNT Enterprise Enabler requirements will be refined by conducting prototyping and technical demonstrations including Alternative Navigation and net-enabled GPS solutions that leverage industry, academia, and the warfighter in an iterative process.		
<u>E. Performance Metrics</u> N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FJ8 / Assured Positioning, Navigation and Timing (PNT)					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	Allot	PM PNT : Various	-	-		-		1.449	Oct 2018	-		1.449	Continuing	Continuing	-
Subtotal			-	-		-		1.449		-		1.449	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RSAM - DAGR Software Development	SS/CPFF	Rockwell Collins : Cedar Rapids, IA	-	-		-		4.635	Feb 2019	-		4.635	Continuing	Continuing	-
RSAM - G-GRAM Software Development	SS/CPIF	GCC Technologies : Oakland, MD	-	-		-		4.298	Jan 2019	-		4.298	Continuing	Continuing	-
Assured PNT Enterprise Enablers Engineering and Technical Contracting Services	C/FFP	Various : Various	-	-		-		23.623	Nov 2018	-		23.623	Continuing	Continuing	-
Subtotal			-	-		-		32.556		-		32.556	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Contracting Services	C/FFP	Various : Various	-	-		-		0.454	Nov 2018	-		0.454	Continuing	Continuing	-
Engineering and Technical Government Services	MIPR	C4ISR : Various	-	-		-		1.771	Oct 2018	-		1.771	Continuing	Continuing	-
Subtotal			-	-		-		2.225		-		2.225	Continuing	Continuing	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Army												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)						<b>Project (Number/Name)</b> FJ8 / Assured Positioning, Navigation and Timing (PNT)			
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
SOSA Testing/RSAM - Government Eng Support	MIPR	Various : Various	-	-		-		2.083	Oct 2018	-		2.083	Continuing	Continuing	-
SOSA Testing/RSAM - Contractor Eng Support	Various	Various : Various	-	-		-		2.201	Jan 2019	-		2.201	Continuing	Continuing	-
Platform Integration Testing	Various	Various : Various	-	-		-		18.379	Oct 2018	-		18.379	Continuing	Continuing	-
SOSA Testing/RSAM Test Equipment	Various	Various : Various	-	-		-		0.165	Nov 2018	-		0.165	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		22.828		-		22.828	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	-		0.000		59.058		-		59.058	Continuing	Continuing	N/A
<b>Remarks</b>															



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army																Date: February 2018													
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)								Project (Number/Name) FJ8 / Assured Positioning, Navigation and Timing (PNT)											
Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				
	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	
PNT System of Sytems Architecture (SOSA) Testing																													
SOSA Testing																													
RSAM - DAGR Sotware Development																													
DAGR Sotware Development																													
RSAM - GB-GRAM Software Development																													
GB-GRAM Software Development																													
Platform Integration Testing																													
Platform Integration Testing																													
Army Enterprise Enablers																													
Army Enterprise Enablers																													

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Army			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FJ8 / Assured Positioning, Navigation and Timing (PNT)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PNT System of Sytems Architecture (SOSA) Testing	1	2019	4	2021
RSAM - DAGR Sotware Development	1	2019	4	2019
RSAM - GB-GRAM Software Development	1	2019	2	2020
Platform Integration Testing	1	2019	4	2021
Army Enterprise Enablers	1	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FJ9 / Dismounted PNT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FJ9: Dismounted PNT	-	0.000	0.000	15.989	-	15.989	3.060	0.550	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.												
A. Mission Description and Budget Item Justification The Dismounted Assured PNT System acquires, protects, and distributes secure PNT on dismounted platforms. Dismounted A-PNT System is a stand-alone system and will be used in conjunction with the PEO Soldier Nett Warrior System. Dismounted A-PNT System is planned to be modular, scalable form-factor that paces the threats and includes development and integration of GPS and non-GPS sensors. Dismounted A-PNT System includes receiver software capable of acquiring Pseudolite signals resulting in additional protection for military GPS in denied environments and includes a migration path to Military-Code (M-Code) and other future technologies.  FY 2019 Base funds in the amount of \$15.989 million are provided to complete risk reduction/prototyping efforts required to mature critical technologies, finalize documentation required to support the acquisition decision, contracting, and execution of manufacturing development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Dismounted A-PNT System									-	-	15.989	
Description: Risk Reduction efforts to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.												
FY 2019 Plans: FY2019 Base funds will support the completion of evaluation of the Dismounted small Military-Code (M-Code) capable prototype and the size, weight, and power optimized multi-sensor navigation prototype. Additionally, the funding will also support the initiation of development of the Dismounted Assured PNT system following the acquisition decision.												
FY 2018 to FY 2019 Increase/Decrease Statement: RDT&E funding increased from \$0.0 million in FY2018 to \$15.989 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.												
Accomplishments/Planned Programs Subtotals									-	-	15.989	

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Army		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / <i>ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)</i>	<b>Project (Number/Name)</b> FJ9 / <i>Dismounted PNT</i>
<p><b>C. Other Program Funding Summary (\$ in Millions)</b> N/A</p> <p><b>Remarks</b></p> <p><b>D. Acquisition Strategy</b> Assured Positioning, Navigation and Timing (PNT) is a system comprised of products including Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and Anti-Jam Antenna System (AJAS), to assure access to and integrity of PNT information. Each product provides a degree of standalone capability that can be leveraged across the solutions and enterprise enablers to raise the capabilities in all environments and across all formations and warfighting functions. Program Manager (PM) PNT manages these products (Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and AJAS) constructed to develop, test, field, and sustain the A-PNT materiel solution.</p> <p>The final acquisition and contracting strategy are under development.</p> <p>The Dismounted A-PNT System acquisition strategy will conduct development, integration and testing of the Dismounted A-PNT System.</p> <p><b>E. Performance Metrics</b> N/A</p>		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)						<b>Project (Number/Name)</b> FJ9 / Dismounted PNT			
<b>Management Services (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Project Management Support - Government	Allot	PM PNT : APG, MD	-	-		-		0.558	Oct 2018	-		0.558	Continuing	Continuing	-
Project Management Support - Contractor	C/CPFF	Various : Various	-	-		-		0.977	Dec 2018	-		0.977	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		1.535		-		1.535	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.															
<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development of a Dismounted M-Code capable prototype	C/CPFF	L3, IEC : Anaheim, CA	-	-		-		1.372	Dec 2018	-		1.372	Continuing	Continuing	-
Development of a small SWAP-C multi sensor navigation prototype	MIPR	CERDEC Command Power and Integration Directorate : APG, MD	-	-		-		1.181	Dec 2018	-		1.181	Continuing	Continuing	-
Development of sensor fusion algorithm	MIPR	CERDEC Command Power and Integration Directorate : APG, MD	-	-		-		0.540	Dec 2018	-		0.540	Continuing	Continuing	-
Engineering and Technical Product Support	MIPR	C4ISR : Various	-	-		-		0.823	Dec 2018	-		0.823	Continuing	Continuing	-
Dismounted A-PNT Manufacturing Development	C/Various	TBD : TBD	-	-		-		7.820	Apr 2019	-		7.820	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		11.736		-		11.736	Continuing	Continuing	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>													<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 2040 / 4				<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				<b>Project (Number/Name)</b> FJ9 / Dismounted PNT							
<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Remarks</b> Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.															
<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Engineering and Technical Services - Government	Various	C4ISR : Various	-	-		-		1.516	Nov 2018	-		1.516	Continuing	Continuing	-
Engineering and Technical Services - Contractor	C/CPFF	Various : Various	-	-		-		0.949	Dec 2018	-		0.949	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		2.465		-		2.465	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.															
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test Support - Contractor	C/Various	Various : Various	-	-		-		0.253	Dec 2018	-		0.253	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.253		-		0.253	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			-	-		0.000		15.989		-		15.989	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Army</b>	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FJ9 / Dismounted PNT
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Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Dismounted A-PNT Risk Reduction Activities									[Redacted]																			
Dismounted A-PNT Acquisition Decision									[Redacted]																			
Dismounted A-PNT Manufacturing Development									[Redacted]																			
Dismounted A-PNT Developmental Testing																	[Redacted]											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Army			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / <i>ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)</i>	<b>Project (Number/Name)</b> FJ9 / <i>Dismounted PNT</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dismounted A-PNT Risk Reduction Activities	1	2019	3	2019
Dismounted A-PNT Acquisition Decision	3	2019	3	2019
Dismounted A-PNT Manufacturing Development	3	2019	3	2021
Dismounted A-PNT Developmental Testing	4	2020	2	2021

**Note**

Program Element (PE) 1206120A project FJ9 transitioned from PE 0604120A project EH8 beginning in FY19.



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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FK1 / PSEUDOLITES PNT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FK1: PSEUDOLITES PNT	-	0.000	0.000	38.302	-	38.302	18.106	6.529	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.												
A. Mission Description and Budget Item Justification Highly accurate Positioning, Navigation and Timing (PNT) data is a key enabler and a cross cutting capability for Army forces to execute their mission. The Army requires ground maneuver forces access to trusted PNT information under conditions where space-based PNT may be limited or denied to maintain its Global Positioning System (GPS) military advantage on the battlefield. The current GPS capability is a fixed frequency system which is vulnerable to current and emerging threats and field conditions.  Pseudolite (satellite-like transmitters) assure GPS access and integrity by providing PNT via terrestrial and airborne-based radio navigation GPS transmitters in electronically or physically challenged environments using a higher power signal. Area protection is provided through the deployment of Pseudolite transmitters supporting a Brigade Combat Team area of operations. Pseudolite supports continued operations of PNT-enabled systems such as Blue Force Tracker, Communications Networks and Precision Guided Munitions. Pseudolite consists of three segments: 1. Pseudolite Transmitter segment provides terrestrial and airborne radio navigation (GPS-like) service in electronically or physically challenged environments using a high power signal. 2. Command and Control (C2) segment to control the Pseudolite transmitters on the battlefield. 3. Receiver segment, which will develop software upgrades to current and future military GPS receivers to receive and process the Pseudolite signals.  FY 2019 Base funds in the amount of \$38.302 million are provided to complete the Technology Maturation and Risk Reduction Phase required to mature critical technologies, finalize documentation required to support the acquisition decision, contracting, and execution of manufacturing development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Pseudolite									-	-	38.302	
Description: Pseudolite Technology Maturation and Risk Reduction to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.												
FY 2019 Plans:												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Army		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FK1 / PSEUDOLITES PNT	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>FY19 Funds will complete the Technology Maturation and Risk Reduction prototyping and testing effort for the Pseudolite transmitter. In addition, efforts will complete the development of prototype software code for the remote Command and Control of Pseudolites over a tactical network. Other efforts include: software upgrades to legacy receivers and completion of software development for Precision Guided Munitions to communicate with the Pseudolite transmitter; Security Certification requirements and initial activities toward achievement; implementation of modifications and upgrades to prototypes based on testing results; integration development efforts with Pseudolite Ground and Air host platforms; acquisition decision, contracting, and execution of manufacturing development.</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b>  RDT&amp;E funding increased from \$0.0 million in FY2018 to \$38.302 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		-	38.302
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b>			
<p>Assured Positioning, Navigation and Timing (PNT) is a system comprised of products including Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and Anti-Jam Antenna System (AJAS), to assure access to and integrity of PNT information. Each product provides a degree of standalone capability that can be leveraged across the solutions and enterprise enablers to raise the capabilities in all environments and across all formations and warfighting functions. Program Manager (PM) PNT manages these products (Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and AJAS) constructed to develop, test, field, and sustain the A-PNT materiel solution.</p> <p>The final acquisition and contracting strategy are under development.</p> <p>The Pseudolite Technology Maturation and Risk Reduction (TMRR) acquisition strategy was approved by the Milestone Decision Authority and Milestone A was successfully completed in May 2015. The Pseudolite product is currently in the TMRR Phase of the acquisition life-cycle.</p> <p>The TMRR Acquisition Strategy for Pseudolites includes: 1) Technology maturation of the Transmitter segment through the use of two prototyping, cost-plus fixed fee (CPFF) contracts; 2) Command and Control (C2) segment will leverage the development by other DoD agencies to the greatest extent possible; 3) Receiver segment will make the use of multiple contracts through existing vehicles for Pseudolite Receiver software prototype development.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	Project (Number/Name) FK1 / PSEUDOLITES PNT
<p>After successful acquisition decision, development, integration and testing of the Pseudolite solution will begin.</p> <p><b>E. Performance Metrics</b> N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FK1 / PSEUDOLITES PNT					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support - Contractor	C/CPFF	Various : Various	-	-		-		1.618	Dec 2018	-		1.618	Continuing	Continuing	-
Subtotal			-	-		-		1.618		-		1.618	Continuing	Continuing	N/A
Remarks															
Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.															
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Pseudolite Prototype - Transmitter Contractor 1	C/CPFF	Datapath - Rockwell Collins : Cedar Rapids IA	-	-		-		2.546	Dec 2018	-		2.546	Continuing	Continuing	-
Pseudolite Prototype - Transmitter Contractor 2	C/CPFF	L-3 Communications : Anaheim, CA	-	-		-		2.547	Dec 2018	-		2.547	Continuing	Continuing	-
Engineering and Technical Product Support	MIPR	C4ISR : Various	-	-		-		2.992	Nov 2018	-		2.992	Continuing	Continuing	-
Pseudolite Command & Control	C/Various	PEO Ammo & PM EW : Various	-	-		-		3.922	Dec 2018	-		3.922	Continuing	Continuing	-
OEM Platform Integration Development for Air Platform	SS/CPFF	PEO Aviation : Various	-	-		-		2.498	Dec 2018	-		2.498	Continuing	Continuing	-
OEM Platform Integration Development for Ground Platform 1, Platform 2, and Platform 3	SS/CPFF	Various : Various	-	-		-		1.000	Dec 2018	-		1.000	Continuing	Continuing	-
PM Platform Integration Development	MIPR	Various : Various	-	-		-		0.635	Dec 2018	-		0.635	Continuing	Continuing	-
Pseudolite Manufacturing Development	C/Various	TBD : TBD	-	-		-		13.758	Apr 2019	-		13.758	Continuing	Continuing	-
Subtotal			-	-		-		29.898		-		29.898	Continuing	Continuing	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>													<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)					<b>Project (Number/Name)</b> FK1 / PSEUDOLITES PNT				

  

<b>Product Development (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
<b>Remarks</b> Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.															

  

<b>Support (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Services - Contractor	C/CPFF	Various : Various	-	-		-		6.374	Dec 2018	-		6.374	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		6.374		-		6.374	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.															

  

<b>Test and Evaluation (\$ in Millions)</b>				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Pseudolite Prototype Lab and Field Testing	MIPR	Various : Various	-	-		-		0.412	Dec 2018	-		0.412	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.412		-		0.412	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.															

  

			Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-	0.000	38.302	-	38.302	Continuing	Continuing	N/A
<b>Remarks</b>											

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Army</b>			<b>Date: February 2018</b>		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)		<b>Project (Number/Name)</b> FK1 / PSEUDOLITES PNT	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023																														
	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																											
Pseudolite (PL) Prototype Development Contractor 1																																																							
Pseudolite (PL) Prototype Development Contractor 2																																																							
Pseudolite (PL) Command and Control Development & Test																																																							
Pseudolite (PL) Receiver Development & Test																																																							
Pseudolite (PL) Acquisition Decision																																																							
Pseudolite (PL) Manufacturing Development																																																							
Pseudolite (PL) Critical Design Review (CDR)																																																							
Pseudolite (PL) Developmental Testing																																																							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Army			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FK1 / PSEUDOLITES PNT	

**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Pseudolite (PL) Prototype Development Contractor 1	1	2019	2	2019
Pseudolite (PL) Prototype Development Contractor 2	1	2019	2	2019
Pseudolite (PL) Command and Control Development & Test	1	2019	4	2021
Pseudolite (PL) Receiver Development & Test	1	2019	4	2021
Pseudolite (PL) Acquisition Decision	3	2019	3	2019
Pseudolite (PL) Manufacturing Development	3	2019	3	2021
Pseudolite (PL) Critical Design Review (CDR)	1	2020	1	2020
Pseudolite (PL) Developmental Testing	4	2020	2	2021

**Note**

Program Element (PE) 1206120A project FK1 transitioned from PE 0604120A project EH9 beginning in FY19.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FK2 / MOUNTED PNT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FK2: MOUNTED PNT	-	0.000	0.000	22.816	-	22.816	14.698	7.594	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.												
A. Mission Description and Budget Item Justification The Mounted Assured Positioning, Navigation and Timing (A-PNT) System provides PNT data and is a key enabler and a cross cutting capability for Army ground maneuver forces to execute their mission. Army ground maneuver Forces require access to trusted PNT information under conditions where space-based PNT may be limited or denied to maintain its Global Positioning System (GPS) military advantage on the battlefield. The current GPS capability is a fixed frequency system which is vulnerable to current and emerging threats and field condition.  Mounted A-PNT is a scalable form-factor that distributes PNT data to multiple devices (client systems) on mounted platforms. The system fuses military GPS with physics-based sensors and timing technology to provide trusted PNT data, which allows the Soldier to operate in GPS degraded or denied environments. Mounted APNT System includes receiver software capable of acquiring Pseudolite signals resulting in additional protection for military GPS in denied environments and paces the threat by including a migration path to Military Code (M-Code) and other future technologies.  FY 2019 Base funds in the amount of \$22.816 million are provided to complete risk reduction/prototyping efforts required to mature critical technologies, finalize documentation required to support the acquisition decision, contracting, and execution of manufacturing development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Mounted A-PNT System									-	-	22.816	
Description: Risk Reduction efforts to reduce technology risk and to determine the appropriate set of technologies to be integrated into the system.												
FY 2019 Plans: FY2019 Base funds will support completion of focused prototyping with industry and Federally Funded Research & Development Center partners, Army Military Code (M-Code) development, and early client system integration efforts in the system integration lab. The funds will also initiate the Mounted Assured PNT manufacturing development.												
FY 2018 to FY 2019 Increase/Decrease Statement:												



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Army		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FK2 / MOUNTED PNT	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
RDT&E funding increased from \$0.0 million in FY2018 to \$22.816 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.			
<b>Accomplishments/Planned Programs Subtotals</b>		-	22.816
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b> Assured Positioning, Navigation and Timing (A-PNT) is a system comprised of products including Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and Anti-Jam Antenna System (AJAS), to assure access to and integrity of PNT information. Each product provides a degree of standalone capability that can be leveraged across the solutions and enterprise enablers to raise the capabilities in all environments and across all formations and warfighting functions. Program Manager (PM) PNT manages these products (Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and AJAS) constructed to develop, test, field, and sustain the A-PNT materiel solution.  The final acquisition and contracting strategy are under development.  The Mounted A-PNT System acquisition strategy will conduct development, integration and testing of the Mounted A-PNT System.			
<b>E. Performance Metrics</b> N/A			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>												<b>Date: February 2018</b>			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)						<b>Project (Number/Name)</b> FK2 / MOUNTED PNT			
<b>Management Services (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Project Management Support - Government	Allot	PM PNT : APG, MD	-	-		-		0.854	Nov 2018	-		0.854	Continuing	Continuing	-
Project Management Support - Contractor	C/CPFF	Various : Various	-	-		-		0.742	Dec 2018	-		0.742	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		1.596		-		1.596	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.															
<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Prototype Development Contractor 1	C/CPFF	Rockwell Collins : Cedar Rapids, IA	-	-		-		1.071	Dec 2018	-		1.071	Continuing	Continuing	-
Prototype Development Contractor 2	C/CPFF	Northrup Grumman : San Diego, CA	-	-		-		0.994	Dec 2018	-		0.994	Continuing	Continuing	-
Engineering and Technical Product Support	MIPR	C4ISR : Various	-	-		-		2.695	Dec 2018	-		2.695	Continuing	Continuing	-
Development of the Systems Engineering and Integration Lab	MIPR	CERDEC Command Power and Integration Directorate : APG, MD	-	-		-		4.774	Dec 2018	-		4.774	Continuing	Continuing	-
Mounted A-PNT Manufacturing Development	C/Various	TBD : TBD	-	-		-		6.266	Apr 2019	-		6.266	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		15.800		-		15.800	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.															

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>												<b>Date: February 2018</b>			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)						<b>Project (Number/Name)</b> FK2 / MOUNTED PNT			
<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Engineering and Technical Services - Government	Various	C4ISR : Various	-	-		-		1.542	Nov 2018	-		1.542	Continuing	Continuing	-
Engineering and Technical Services - Contractor	C/CPFF	Various : Various	-	-		-		3.405	Dec 2018	-		3.405	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		4.947		-		4.947	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.															
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test Support - Contractor	C/CPFF	Various : Various	-	-		-		0.473	Dec 2018	-		0.473	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.473		-		0.473	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			-	-		0.000		22.816		-		22.816	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Army</b>			<b>Date: February 2018</b>		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)		<b>Project (Number/Name)</b> FK2 / MOUNTED PNT	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Mounted A-PNT Risk Reduction Activities																												
Mounted A-PNT Acquisition Decision																												
Mounted A-PNT Manufacturing Development																												
Mounted A-PNT Critical Design Review																												
Mounted A-PNT Developmental Testing																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Army			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FK2 / MOUNTED PNT	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mounted A-PNT Risk Reduction Activities	1	2019	3	2019
Mounted A-PNT Acquisition Decision	3	2019	3	2019
Mounted A-PNT Manufacturing Development	3	2019	3	2022
Mounted A-PNT Critical Design Review	4	2020	4	2020
Mounted A-PNT Developmental Testing	3	2021	1	2022

**Note**

Program Element (PE) 1206120A project FK2 transitioned from PE 0604120A project EJ2 beginning in FY19.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)				Project (Number/Name) FK3 / ANTI-JAM ANTENNA PNT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FK3: ANTI-JAM ANTENNA PNT	-	0.000	0.000	10.135	-	10.135	19.501	8.051	1.653	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This is not a new start program. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.												
A. Mission Description and Budget Item Justification The Anti-Jam Antenna System (AJAS) provides point protection by steering electronic nulls at interference sources or beams at valid signal sources. This enables continuous GPS signal acquisition and tracking in a navigation warfare (jamming) environment. The AJAS is deployed as a scalable component accessory to the Mounted Assured Positioning, Navigation and Timing (PNT) System.  FY 2019 Base funds in the amount of \$10.135 million are provided to complete risk reduction efforts required to mature critical technologies, finalize documentation required to support the acquisition decision, contracting, and execution of manufacturing development.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Anti-Jam Antenna System									-	-	10.135	
Description: Risk reduction activities associated with the Anti-Jam Antenna System (AJAS) is to reduce technology risk and to determine the appropriate set of technologies to be integrated into the full system.												
FY 2019 Plans: FY 2019 Base funds will provide support to risk reduction activities to include: development of a Systems Integration Lab used for evaluation of system interoperability and platform integration; evaluation of commercial AJAS using modeling and simulation; complete development of AJAS software models; finalize development/modification of commercial AJAS; Anechoic Chamber testing; live-sky testing and the initiation of manufacturing development.												
FY 2018 to FY 2019 Increase/Decrease Statement: RDT&E funding increased from \$0.0 million in FY2018 to \$10.135 million in FY2019. In accordance with Section 239 of Title 10, U.S.C., the FY 2018 President's Budget established new Program Elements (PE) to account for all of the Department's Space Major Force Program (MFP)-12 programs. To comply with this requirement, PE 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.												
Accomplishments/Planned Programs Subtotals									-	-	10.135	

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Army		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / <i>ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)</i>	<b>Project (Number/Name)</b> FK3 / <i>ANTI-JAM ANTENNA PNT</i>
<b><u>C. Other Program Funding Summary (\$ in Millions)</u></b> N/A		
<b><u>Remarks</u></b>		
<b><u>D. Acquisition Strategy</u></b> Assured Positioning, Navigation and Timing (A-PNT) is a system comprised of products including Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and Anti-Jam Antenna System (AJAS), to assure access to and integrity of PNT information. Each product provides a degree of standalone capability that can be leveraged across the solutions and enterprise enablers to raise the capabilities in all environments and across all formations and warfighting functions. Program Manager (PM) PNT manages these products (Dismounted A-PNT System, Pseudolite, Mounted A-PNT System, and AJAS) constructed to develop, test, field, and sustain the A-PNT materiel solution.  The final acquisition and contracting strategy are under development.  The AJAS acquisition strategy will conduct development, integration and testing of the AJAS.		
<b><u>E. Performance Metrics</u></b> N/A		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>												<b>Date: February 2018</b>			
<b>Appropriation/Budget Activity</b> 2040 / 4						<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)						<b>Project (Number/Name)</b> FK3 / ANTI-JAM ANTENNA PNT			
<b>Management Services (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Project Management Support - Government	Allot	PM PNT : APG, MD	-	-		-		0.412	Nov 2018	-		0.412	Continuing	Continuing	-
Project Management Support - Contractor	C/CPFF	Various : Various	-	-		-		0.115	Dec 2018	-		0.115	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.527		-		0.527	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.															
<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development of the Systems Engineering and Integration Lab	MIPR	CERDEC Command Power and Integration Lab : APG, MD	-	-		-		0.525	Dec 2018	-		0.525	Continuing	Continuing	-
Anti-Jam Antenna Hardware Simulation and Evaluation	MIPR	CERDEC - Command and Integration Directorate : APG, MD	-	-		-		0.204	Dec 2018	-		0.204	Continuing	Continuing	-
Early Platform Integration and Evaluation	MIPR	Various : Various	-	-		-		0.612	Dec 2018	-		0.612	Continuing	Continuing	-
Engineering and Technical Product Support	MIPR	C4ISR : Various	-	-		-		1.042	Dec 2018	-		1.042	Continuing	Continuing	-
Anti-Jam Antenna Manufacturing Development	C/Various	TBD : TBD	-	-		-		4.863	Apr 2019	-		4.863	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		7.246		-		7.246	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.															



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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Army</b>													<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 2040 / 4				<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)					<b>Project (Number/Name)</b> FK3 / ANTI-JAM ANTENNA PNT						
<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Engineering and Technical Services - Government	Various	C4ISR : Various	-	-		-		0.442	Nov 2018	-		0.442	Continuing	Continuing	-
Engineering and Technical Services - Contractor	C/CPFF	Various : Various	-	-		-		1.325	Dec 2018	-		1.325	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		1.767		-		1.767	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.															
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Anti-Jam Antenna Live Sky Demo and Anechoic Chamber Test	MIPR	CERDEC - Command Power and Integration Directorate : APG, MD	-	-		-		0.595	Dec 2018	-		0.595	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.595		-		0.595	Continuing	Continuing	N/A
<b>Remarks</b> Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			-	-		0.000		10.135		-		10.135	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Army</b>			<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)		<b>Project (Number/Name)</b> FK3 / ANTI-JAM ANTENNA PNT	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Anti-Jam Antenna Risk Reduction Activities									Risk Reduction Activities																			
Anti-Jam Antenna Acquisition Decision									1 Acquisition Decision																			
Ant-Jam Antenna Manufacturing Development									Manufacturing Development																			
Anti-Jam Antenna Critical Design Review													2 CDR															
Anti-Jam Antenna Developmental Testing																	Developmental Testing											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Army			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206120A / ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	<b>Project (Number/Name)</b> FK3 / ANTI-JAM ANTENNA PNT	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Anti-Jam Antenna Risk Reduction Activities	1	2019	3	2019
Anti-Jam Antenna Acquisition Decision	3	2019	3	2019
Ant-Jam Antenna Manufacturing Development	3	2019	3	2022
Anti-Jam Antenna Critical Design Review	4	2020	4	2020
Anti-Jam Antenna Developmental Testing	3	2021	1	2022

**Note**

Program Element (PE) 1206120A project FK3 transitioned from PE 0604120A project EJ3 beginning in FY19.