Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force											Date: March 2024	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1206761SF *I Protected Tactical Service (PTS)*							
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
Total Program Element	-	238.414	360.126	596.996	0.000	596.996	656.025	465.054	483.274	492.806	Continuing	Continuing
643722: *Protected Tactical SATCOM - Global (PTS_G)*	-	0.000	0.000	247.997	0.000	247.997	310.009	0.000	0.000	0.000	0.000	558.006
643728: *Protected Tactical SATCOM*	-	238.414	360.126	348.999	0.000	348.999	346.016	465.054	483.274	492.806	Continuing	Continuing

Note

This program, BA 4, PE 1206761SF, project , Protected Tactical SATCOM - Global (PTS-G), is a new start.

A. Mission Description and Budget Item Justification

The global threat of electronic warfare attacks against space systems will expand in the coming years in both number and types of weapons. Threat development will very likely focus on jamming capabilities against dedicated military satellite communications (SATCOM). To address this critical threat, and in pursuit of more precise solutions for disaggregated strategic and tactical SATCOM, U.S Strategic Command (USSTRATCOM) and Air Force Space Command (AFSPC) initiated the Protected Anti-jam Tactical SATCOM (PATS) family-of-systems. The PATS integrated approach includes the Protected Tactical Satellite Communications (PTS) and Protected Tactical Enterprise Service (PTES) programs to mitigate adversarial jamming effects by using the Protected Tactical Waveform (PTW). The PTS program is the disaggregated tactical communications follow-on to the Advanced Extremely High Frequency (AEHF) program. The United States Space Force (USSF) is developing the PTS system to provide tactical users increased protection with worldwide and polar, beyond-line-of-sight, Anti-Jam (AJ), low-probability-of-intercept communications in benign and highly-contested anti-access/area denial environments utilizing the PTW. The PTS system's on-board payload/signal processing, antenna design, and advanced beam-forming using a distributed, diversified, and agile constellation of hostable payloads and high capacity free-flyers enables reliable tactical SATCOM within close proximities to adversarial jammers. The system also employs interfaces consistent with USSF's on-going resilience initiatives enhancing mission assurance and interoperability. The program's modular, flexible, scalable, and protected tactical payload constellation architecture will increase resiliency through distribution across a larger number of space platforms (e.g., hostable, free-flyer, international partnerships). The PTES program (PE 1206760SF, Project 643726) establishes the ground infrastructure for PTS, which operationalizes the PTW.

For the initial PTS phase, USSF is utilizing FY 2016 National Defense Authorization Act (NDAA), Middle Tier of Acquisition (MTA) for Rapid Prototyping (RP) authority and Section 815, Other Transaction Authority (OTA), to achieve an affordable, rapid, operational capability for the tactical warfighter. This strategy employs rapid payload development to progressively and incrementally deploy prototypes with residual capabilities demonstrated in an operational environment. These prototyping payloads (PTS-P) demonstrate innovative AJ technologies with modular and scalable payloads to meet validated military needs for protected tactical communications. This includes technical baseline development, systems engineering trade analyses, internal/external system integration and development, candidate system architecture evaluations, risk reduction demonstrations, prototyping concepts development, system testing, and enabling technologies maturation. The PTS Engineering, Manufacturing, and Development (EMD) Phase, called PTS-Resilient (PTS-R), will follow the PTS-P Phase to develop purpose-built "hub in space" satellites with full signal processing and switching capability that allows direct connectivity between users.

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1206761SF *I Protected Tactical Service (PTS)*

The PTS-P and PTS-R Phases include a Space Segment, Ground Segment, and Gateway Segment. For the Space Segment, the USSF strategy utilizes a payload-centric focus to enable an affordable, resilient space architecture. This enables hosting and rideshare opportunities with other US government, commercial, International Partner (IP) satellites or integration onto a commodity satellite bus. For the Ground Segment, PTS develops satellite command and control (C2) and leverages the PTES RP activity for mission and key management planning. The PTS Gateway Segment enables tactical warfighters reach back to global DoD Information Network. The PTS user Terminal Segment, not included in this PTS acquisition, will be procured by the military services utilizing low-cost PTW modem upgrades enabled by the Air Force - Army Anti-Jam Modem (A3M) ACAT III program and the Navy Wideband Anti-Jam Modem System (WAMS) technology demonstration program. PTS also develops the National Security Agency (NSA)-certified and space-flight qualified production-ready Space Hub End Cryptographic Unit (ECU). Starting the ECU as a single, early risk reduction effort targets a high-risk area of the PTS development and enables PTS program success.

In CY 2022 the Space Warfighting Analysis Center (SWAC) identified gaps in protected SATCOM capabilities relative to existing and planned capabilities against current and predicted user needs, with consideration of current and emerging challenges to both operating environments and system deployment. SWAC developed a Force Design (FD) to address these gaps, realigning capabilities and disaggregating mission sets.

Protected Tactical SATCOM - Global (PTS-G) is a key and enabling capability of the USSF Force Design (FD) that bridges the gap between the more focused capabilities provided by Protected Tactical SATCOM - Resilient (PTS-R), and the broadly-available but also the lower assured access capabilities provided by existing / emerging MILSATCOM and commercial services. PTS-G also augments current and future warfighter capability with increased global capacity. PTS-G is a moderate degree of assured access communications across military Ka-band and X-band using a disaggregated and proliferated sets of lower-complexity satellites. Space Systems Command (SSC) will develop the PTS-G space and ground systems to provide worldwide assured-access communications for tactical warfighters.

PTS-G will consist of two types of space vehicles (PTS-G-Ka and PTS-G-X), and ground infrastructure (system controller/hub with gateways), and will connect to existing Protected Anti-jam Tactical SATCOM (PATS) ground infrastructure (mission management system and cryptographic key management system) developed under the Protected Tactical Enterprise Service (PTES) program.

PTS-G will consist of multiple satellites that can provide either X-band or mil Ka-band transponded capability while also supporting the utilization of the PTW Waveform. PTW modems for user terminals will be acquired by each Service and by international partners.

Initially, PTS-G will provide capabilities in select regions. PTS-G will target a solution that can provide worldwide coverage. PTS-G will be interoperable with the PTES program to perform management and cryptographic key management for PTW users, but PTS-G will procure and install the associated PTES Joint Hubs and other ground infrastructure to operate the satellites, anchor the data, and perform O&S. In addition, the PTS-R system will be integrated with components of PTES and will be complementary to PTS-G.

PTS-G addresses the gap in protected communications capability identified in the USSF FD and in the Joint Space Communications Layer (JSCL) Initial Capabilities Document (ICD). To meet the warfighter requirements for protected tactical MILSATCOM and the capability gaps identified in these studies in a timely and cost-effective manner, use and modification of existing capabilities and Commercial Off the Shelf (COTS) products will be leveraged to the maximum extent, to develop the PTS-G capabilities. SSC will strategically execute prototyping and risk reduction as needed to develop and deploy PTS-G capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*

This program element may include necessary civilian pay expenses required to manage, execute, and deliver PTS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	252.078	360.126	348.387	0.000	348.387
Current President's Budget	238.414	360.126	596.996	0.000	596.996
Total Adjustments	-13.664	0.000	248.609	0.000	248.609
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-8.884	0.000			
• Other Adjustments	-4.780	0.000	248.609	0.000	248.609

Change Summary Explanation

FY 2023: -4.780M BTR for Space C2.
FY 2025: +247.413M adds PTS-G, which will deliver global X-band and Ka-band capabilities to the warfighter.
FY 2025: +1.196M inflation adjustment

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 4	R-1 Program Element (Number/Name) PE 1206761SF / *Protected Tactical Service (PTS)*	Project (Number/Name) 643722 / *Protected Tactical SATCOM - Global (PTS_G)*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
643722: *Protected Tactical SATCOM - Global (PTS_G)*	-	0.000	0.000	247.997	0.000	247.997	310.009	0.000	0.000	0.000	0.000	558.006
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 4, PE 1206761SF, project , Protected Tactical SATCOM - Global (PTS-G), is a new start.

A. Mission Description and Budget Item Justification

In CY 2022 the Space Warfighting Analysis Center (SWAC) identified gaps in protected SATCOM capabilities relative to existing and planned capabilities against current and predicted user needs, with consideration of current and emerging challenges to both operating environments and system deployment. SWAC developed a Force Design (FD) to address these gaps, realigning capabilities and disaggregating mission sets.

Protected Tactical SATCOM - Global (PTS-G) is a key and enabling capability of the USSF Force Design (FD) that bridges the gap between the more focused capabilities provided by Protected Tactical SATCOM - Resilient (PTS-R), and the broadly-available but also the lower assured access capabilities provided by existing / emerging MILSATCOM and commercial services. PTS-G also augments current and future warfighter capability with increased global capacity. PTS-G is a moderate degree of assured access communications across military Ka-band and X-band using a disaggregated and proliferated sets of lower-complexity satellites. Space Systems Command (SSC) will develop the PTS-G space and ground systems to provide worldwide assured-access communications for tactical warfighters.

PTS-G will consist of two types of space vehicles (PTS-G-Ka and PTS-G-X), and ground infrastructure (system controller/hub with gateways), and will connect to existing Protected Anti-jam Tactical SATCOM (PATS) ground infrastructure (mission management system and cryptographic key management system) developed under the Protected Tactical Enterprise Service (PTES) program.

PTS-G will consist of multiple satellites that can provide either X-band or mil Ka-band transponded capability while also supporting the utilization of the PTW Waveform. PTW modems for user terminals will be acquired by each Service and by international partners.

Initially, PTS-G will provide capabilities in select regions. PTS-G will target a solution that can provide worldwide coverage. PTS-G will be interoperable with the PTES program to perform management and cryptographic key management for PTW users, but PTS-G will procure and install the associated PTES Joint Hubs and other ground infrastructure to operate the satellites, anchor the data, and perform O&S. In addition, the PTS-R system will be integrated with components of PTES and will be complementary to PTS-G.

PTS-G addresses the gap in protected communications capability identified in the USSF FD and in the Joint Space Communications Layer (JSCL) Initial Capabilities Document (ICD). To meet the warfighter requirements for protected tactical MILSATCOM and the capability gaps identified in these studies in a timely and cost-effective

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643722 / *Protected Tactical SATCOM - Global (PTS_G)*

manner, use and modification of existing capabilities and Commercial Off the Shelf (COTS) products will be leveraged to the maximum extent, to develop the PTS-G capabilities. SSC will strategically execute prototyping and risk reduction as needed to develop and deploy PTS-G capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Protected Tactical SATCOM - Global (PTS-G)	-	0.000	247.997
Description: PTS-G will consist of multiple satellites that can provide either x-band or mil-ka band transponded capability, and ground infrastructure (system controller/hub with gateways), and will connect to existing Protected Anti-jam Tactical SATCOM (PATS) ground infrastructure (mission management system and cryptographic key management system) developed under the Protected Tactical Enterprise Service (PTES) program pending any additional ground hardware and software updates that PTS-G will have to procure and still to modify the PTES baseline. PTS-G will use PTW-capable user modems but may also support transponded communications with other modems. PTW modems for user terminals will be acquired by each Service and by international partners. ***FY 2024 Plans:*** N/A ***FY 2025 Plans:*** The program office plans to release the PTS-G RFP in the 1st Quarter of FY 2025 for a target new start contract award of 2nd Quarter FY 2025. The program office will also refine financial and schedule considerations, finalize system requirements and designs, and begin production of PTS-G Space Vehicles (SV). Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 increased to support establishing the program of record, support contract award, and begin SV production.			
Accomplishments/Planned Programs Subtotals	-	0.000	247.997

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The PTS-G Acquisition Strategy will be developed in FY 2024. The Program Office is working on Preliminary plans to include a competitive award to one or multiple contractors for the development of PTS-G vehicles (potentially driving competition between vendors along the vehicle type (x-band and mil-ka band) or within a single vehicle type), with IOC in FY 2028 and FOC in FY 2032. Contract type is undetermined at this point, but a firm-price solution will be primarily explored for the design,

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643722 / *Protected Tactical SATCOM - Global (PTS_G)*

build, test and operations phases of PTS-G. The 45th Test Squadron is the PTES Developmental Test Organization and the 4th Test & Evaluation Squadron is the Operational Test organization.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643722 / *Protected Tactical SATCOM - Global (PTS_G)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PTS-G Space Vehicles and Ground Modernization	C/CPAF	Not specified. : TBD	-	-		-		218.058	Feb 2025	-		218.058	Continuing	Continuing	-
PTS-G Technical MissionAnalysis (TMA)	C/CPAF	Not specified. : TBD	-	-		-		2.300	Oct 2024	-		2.300	Continuing	Continuing	-
PTS-G Enterprise SE&I	C/CPAF	Not specified. : TBD	-	-		-		7.537	Nov 2024	-		7.537	Continuing	Continuing	-
SBIR/STTR	C/CPAF	Not specified. : TBD	-	-		-		8.928		-		8.928	Continuing	Continuing	-
		Subtotal	-	-		-		236.823		-		236.823	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	C/CPAF	Not specified. : TBD	-	-		-		2.900	Jan 2025	-		2.900	Continuing	Continuing	-
A&AS	C/CPAF	Not specified. : TBD	-	-		-		8.174	Nov 2024	-		8.174	Continuing	Continuing	-
Other Support	C/CPAF	Not specified. : TBD	-	-		-		0.100	Oct 2024	-		0.100	Continuing	Continuing	-
		Subtotal	-	-		-		11.174		-		11.174	Continuing	Continuing	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		247.997		-		247.997	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643722 / *Protected Tactical SATCOM - Global (PTS_G)*

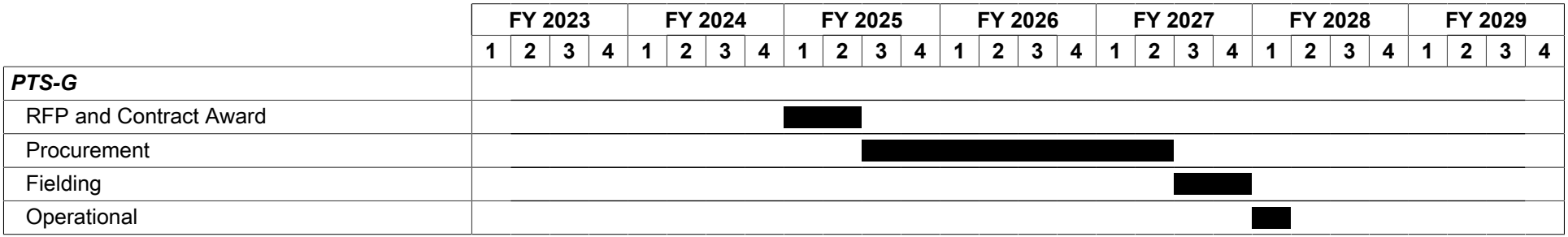

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643722 / *Protected Tactical SATCOM - Global (PTS_G)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PTS-G				
RFP and Contract Award	1	2025	2	2025
Procurement	3	2025	2	2027
Fielding	3	2027	4	2027
Operational	1	2028	1	2028

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 4	R-1 Program Element (Number/Name) PE 1206761SF / *Protected Tactical Service (PTS)*	Project (Number/Name) 643728 / *Protected Tactical SATCOM*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
643728: *Protected Tactical SATCOM*	-	238.414	360.126	348.999	0.000	348.999	346.016	465.054	483.274	492.806	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

For the initial PTS phase, USSF is utilizing FY 2016 National Defense Authorization Act (NDAA), Middle Tier of Acquisition (MTA) for Rapid Prototyping (RP) authority and Section 815, Other Transaction Authority (OTA), to achieve an affordable, rapid, operational capability for the tactical warfighter. This strategy employs rapid payload development to progressively and incrementally deploy prototypes with residual capabilities demonstrated in an operational environment. These prototyping payloads (PTS-P) demonstrate innovative AJ technologies with modular and scalable payloads to meet validated military needs for protected tactical communications. This includes technical baseline development, systems engineering trade analyses, internal/external system integration and development, candidate system architecture evaluations, risk reduction demonstrations, prototyping concepts development, system testing, and enabling technologies maturation. The PTS Engineering, Manufacturing, and Development (EMD) Phase, called PTS-Resilient (PTS-R), will follow the PTS-P Phase to develop purpose-built "hub in space" satellites with full signal processing and switching capability that allows direct connectivity between users.

The PTS-P and PTS-R Phases include a Space Segment, Ground Segment, and Gateway Segment. For the Space Segment, the USSF strategy utilizes a payload-centric focus to enable an affordable, resilient space architecture. This enables hosting and rideshare opportunities with other US government, commercial, International Partner (IP) satellites or integration onto a commodity satellite bus. For the Ground Segment, PTS develops satellite command and control (C2) and leverages the PTES RP activity for mission and key management planning. The PTS Gateway Segment enables tactical warfighters reach back to global DoD Information Network. The PTS user Terminal Segment, not included in this PTS acquisition, will be procured by the military services utilizing low-cost PTW modem upgrades enabled by the Air Force-Army Anti-Jam Modem (A3M) ACAT III program and the Navy Wideband Anti-Jam Modem System (WAMS) technology demonstration program. PTS also develops the National Security Agency (NSA)-certified and space-flight qualified production-ready Space Hub End Cryptographic Unit (ECU). Starting the ECU as a single, early risk-reduction effort targets a high-risk area of the PTS development and enables PTS program success.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: PTS Prototype Design and Development	150.047	73.417	57.159
Description: Rapid prototyping of the PTS Space Segment for two PTS-P payloads and payload and bus C2 development/ upgrades at the operating centers for the Ground Segment. Develop, demonstrate, test, and evaluate PTS hardware/software systems and key system components. Design and develop modular, scalable payloads to support hosted or free-flyer configurations. Includes integration to host vehicle or purchase of a bus for free-flier configuration. Demonstrate prototype payload on-orbit performance. Evaluate PTS concept of operations with user participation and enable potential residual operational capability. Mature and validate user requirements. Support development, risk reduction efforts, and integration of PTS to deliver two prototype payloads available for launch in FY 2025, one as a hosted payload and one as a free-flyer.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2024 Plans: Continue prototyping and risk reduction efforts. Conduct final build, integration, and test activities to complete two PTS prototype payloads to be available for launch in FY 2025 as payloads on Boeing's WGS-11 (hosted) and Northrup Grumman Corporation (NGC)'s ESPAStar-HP satellites (free-flyer). Conduct cybersecurity testing and receive interim authorization to test (IATT). Conduct payload to space vehicle integration and testing. Conduct space vehicle to launch vehicle integration for two PTS-P payloads. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to; program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2025 Plans:*** Continue prototyping and risk reduction efforts. Continue and complete payload to space vehicle integration and testing. Continue and complete space vehicle to launch vehicle integration. Provide launch support activities for the rapid prototype payloads aboard Boeing's WGS-11 and Northrup Grumman Corporations (NGC's) ESPAStar-HP satellites. Continue cybersecurity testing and receive interim authorization to test (IATT). Conduct initial on-orbit test and demonstration of PTS payloads. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to completion of prototype payload build. However, PTS-P Launch and Operations activities continue throughout FY 2025.			
Title: PTS-P Space Hub End Cryptographic Unit (ECU) ***Description:*** Develop a single, National Security Agency (NSA) certified, space-flight qualified, production-ready Space Hub ECU for integration with the PTS payloads. Conduct and design development to alleviate critical path risks to the launch of PTS payloads. Conduct requirements reviews, functional and design reviews, PTS interface development, Interface Control Document (ICD) coordination, and payload integration with PTS vendors. ***FY 2024 Plans:*** Conduct quick-reaction troubleshooting/deficiency resolution for ECU during final integration and test of two PTS prototype payloads. ***FY 2025 Plans:***	11.720	5.757	4.900

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Complete final integration and test activities required for NSA certification. Conduct quick-reaction troubleshooting/deficiency resolution for ECU during SV integration and testing as well as on-orbit test and demonstration activities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to completion of final integration and test of two PTS prototype payloads.			
Title: PTS-P Ground Development ***Description:*** Develops and incorporates Mission Management System and Key Management System (MMS/KMS) modifications of the PTES program ground capability to plan and manage PTS, the associated cryptographic material and the SATCOM links they enable. Also develops and incorporates modifications to MMS of the WGS program ground capability (i.e. Common Network Planning Software (CNPS) and Wideband SATCOM Trend Analysis and Anomaly Resolution System (WSTARS)). ***FY 2024 Plans:*** Continue MMS/KMS upgrades to modify PTES Ground Segment to conduct PTS prototype payload MMS/KMS for on-orbit operations. Conduct integration and testing between the payloads and the PTES MMS/KMS, interoperability/interface and control of the ECU to the Payload, and compatibility with PATS user terminals. Support integration and testing by quickly responding with troubleshooting and deficiency resolution. Continue development, modifications, and integration of the WGS CNPS planning system and the WSTARS, which provides the overarching management of all sub-systems, providing situational awareness to all users of the Wideband SATCOM Operations Management System (WSOMS). ***FY 2025 Plans:*** Continue MMS/KMS upgrades to modify PTES Ground Segment to conduct PTS prototype payload MMS/KMS for on-orbit operations. Continue integration and testing between the payloads and the PTES MMS/KMS, interoperability/interface and control of the ECU to the Payload, and compatibility with PATS user terminals. Support integration and testing by quickly responding with troubleshooting and deficiency resolution. Continue development, modifications, and integration of the WGS CNPS planning system and the WSTARS, which provides the overarching management of all sub-systems, providing situational awareness to all users of the WSOMS. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 increased due to ground segment modifications in support of the PTS prototype launch.	3.599	18.257	20.619
Title: PTS-P Gateway Development ***Description:*** Develop the Gateway Segment, also called PTS Ground Entry Terminal-Prototype (PGET-P), for integration with the PTS system. Conduct requirements reviews, functional and design reviews, PTS interface development, and Interface Control Document (ICD) coordination, and integration with PTW modems (i.e. A3M and WAMS)	7.567	5.420	3.000

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2024 Plans: Conduct integration and test of PGET prototype. Conduct integration and test/demonstrations with PTW modems and payload prototypes to reduce system level risk. Deliver and install at site location in preparation for prototype payload launch. ***FY 2025 Plans:*** Continue integration and test/demonstrations of two PGET prototypes with PTW modems and payload prototypes to reduce system level risk. Complete install of PGETs at test site locations. Support prototype payload launches as well on-orbit test and demonstration activities. Conduct quick-reaction troubleshooting/deficiency resolution for PGET during installation as well as on-orbit test and demonstration activities. Conduct planning for eventual PGET move and installation at final operational location. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreased due to completion of key PGET integration and test activities.			
Title: PTS Engineering and Manufacturing Development (EMD) Phase	0.000	161.252	162.124
Description: Continues PTS EMD Acquisition Planning, previously included in the PTS-P Design and Development Major Thrust (FY 2023). Beginning in FY 2024 it was separated as its own Major Thrust. FY 2024 will initiate the EMD phase for PTS space, ground, and gateway segments and key system components. Develop, build, test, and evaluate next PTS payloads to support hosted or free-flyer configurations available for launch in FY 2029. Includes payload and bus control development/upgrades at the operating centers. Deliver Initial Operational Capability (IOC) for protected communications against threats in FY 2030 with operational payloads. Continue to mature PTS concept of operations with user participation. ***FY 2024 Plans:*** Award up to two payload contracts to begin design of PTS EMD Phase Payloads available for launch in FY 2029 following acquisition planning efforts begun in FY 2023 previously included in the PTS-P Design and Development Major Thrust. Conduct design and development of next PTS payloads to support hosted or free-flyer configurations. Includes integration to host vehicle or purchase of a bus for free-flier configuration. Develop, demonstrate, test, evaluate, and purchase PTS hardware and software systems. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2025 Plans:*** Continue significant ramp up of design and development activities for the 2 PTS-R Satellites as well as 2 Gateway Terminals and the Ground Control Segment for payload and bus control operations. Conduct major milestones to include Integrated Baseline Review, System Requirements Review and Preliminary Design Review and prepare for Critical Design Review. Purchase initial PTS-R hardware and software systems. Rapidly respond to implement system resiliency and situational awareness necessary			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, and activities that may leverage commercial and international opportunities. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 increased due to ramp up of design and development activities for the 2 PTS-R Satellites as well as 2 Gateway Terminals and the Ground Control Segment for payload and bus control operations. These activities include preparing for and conducting Integrated Baseline, System Requirements, and Preliminary Design reviews with the contractors.			
Title: Protected Tactical Testbed ***Description:*** Protected Tactical Testbed provides a government gold standard of reference for risk reduction and experimentation on critical technology elements for the space payload, terminals and networking segments of the PATS system. It enables system integration capabilities with industry and FFRDC partners for interoperability testing and conducting experiments to mature the PATS operations, with a focus on the PTW. Supports the PTS RP and EMD Phases. ***FY 2024 Plans:*** Continue to demonstrate interoperability between the PTS payload and the PTES MMS, interoperability/interface and control of the ECU to the PTS payload, and compatibility with PATS user terminals. Continue PTW Lead Service duties to demonstrate that PTW will support the department's Core Waveform program, to include verification of the PTW modem interoperability with the joint force. JSEC executes and enables critical testing activities for prototype payload contractors. Ensures the development process and impending product adhere to the tenets defined by the established requirements. Continue multi-service development of PATS user terminals A3M and Navy WAMS and final development stages of the PTES delivery. Continue use in outreach efforts to potential coalition partners and other emerging users to demonstrate capability using their space, ground, and user terminal assets. ***FY 2025 Plans:*** Continue to demonstrate interoperability between PTS and the PTES MMS, interoperability/interface and control of the ECU to the PTS payload, and compatibility with PATS user terminals. Continue PTW Lead Service duties to demonstrate that PTW will support the department's Core Waveform program, to include verification of the PTW modem interoperability with the joint force. Joint SATCOM Engineering Center (JSEC) executes and enables critical testing activities for PTS contractors. Ensures the development process and impending PTW products adhere to the tenets defined by the established Service requirements. Continue multi-Service testing and fielding of the PATS user terminals with A3M and Navy WAMS as well as early PTES operations. Continue use in outreach efforts to potential coalition partners and other emerging users to demonstrate capability using their space, ground, and user terminal assets. ***FY 2024 to FY 2025 Increase/Decrease Statement:***	12.799	11.740	11.540

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
FY 2025 decreased slightly due to reduced JSEC cost-share requirements with other PATS segments.			
Title: Technical Baseline Management, System Integration and Test Support	52.682	84.283	89.657
Description: Perform as Government system integrator function through acquiring, designing, testing, and integrating key segments and interfaces. Mature technical baseline and interface requirements for the system. Conduct architectural engineering and system level integration planning supporting the PTS RP and EMD Phases for the Space, Ground, and Gateway Segments. Support, configure, and conduct integrated testing of the major PTS subsystems, segments, and end-to-end system, to include supporting testing conducted by the 96th Test Wing (TW). Manage the PTS open system architecture, refine interface requirements, and validate concept of operations through integrated system performance demonstrations. ***FY 2024 Plans:*** Continue to provide Satellite Vehicle (SV) integration and test support for two PTS prototype payloads availability for launch in FY 2025. Continue to manage and test key system interfaces for PTS prototype Ground, Space, and Gateway Segments as well as PATS ground and terminal segments to reduce integration risks. Continue to provide SV integration and test support to capability development and interface maturity of PTS prototype. Conduct key interface tests between the PTS prototype and emulators/ simulators to reduce risk to PATS level integration with PTES and other partners' protected SATCOM programs. Conduct final launch integration activities to include SV to Launch Vehicle (LV) coordination for two PTS prototype payloads. Continue concept of operations development. Continue launch planning and activities and finalize coordination with national and international agencies for orbital slots and frequency allocation. ***FY 2025 Plans:*** Continue to manage and test key system interfaces for PTS Ground, Space, and Gateway Segments as well as PATS ground and terminal segments to reduce integration risks. Continue to provide SV integration and test support for two PTS prototype payloads availability for launch in FY 2025. Continue interface tests between the PTS prototype and emulators/simulators to reduce risk to PATS level integration with PTES. Conduct final launch integration activities to include SV to LV coordination for two PTS prototype payloads. Continue concept of operations development. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** FY 2025 decreases slightly due to completion of prototype payload integration and test activities prior to launch.			
Accomplishments/Planned Programs Subtotals	238.414	360.126	348.999

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

D. Acquisition Strategy

The PTS team utilizes the FY 2016 NDAA MTA guidance for Rapid Prototyping/Rapid Fielding and Section 815 OTA guidance in developing the acquisition strategy. This strategy places an emphasis on the rapid prototyping, production, and incremental iteration of PTS capability. This strategy takes the form of a series of successively honed and tailored spirals, focusing on payload development and hosting opportunities and incorporating lessons learned from Milstar, Enhanced Polar System (EPS), EPS-Recapitalization (EPS-R), AEHF, PTES, and commercial SATCOM practices. The program was initiated in June 2019 when the Space Hub ECU was competitively awarded as a Cost-Plus Inventive-Fee (CPIF) contract to L3-Harris under the Space Enterprise Consortium (SpEC) using OTA. For the Space Segment, PTS-P development of payloads 1-2 were competitively awarded as Firm-Fixed Price (FFP) contracts under the SpEC using OTA to NGC, Lockheed Martin, and Boeing. After completion of the prototype payload Preliminary Design Review (PDR) phase in March 2020, Boeing and NGC were selected to continue building their payloads for launch. Additionally, the Ground Segment (MMS/KMS upgrades) efficiently leverages Boeing's existing PTES contract (competitively awarded CPIF development contract) for PTES software updates and contracts with the US Army Project Management Integrated Enterprise Network (PM IEN) for modifications of WGS MMS. The Gateway Segment leverages agreements with the Naval Information Warfare Center (NIWC), PdM SATCOM (US Army), and MIT/LL. The 96th TW supports testing and initial operations and JSEC executes and enables critical testing activities for prototype payload contractors. On 4 Oct 2023, The Assistant Secretary of the Air Force for Space Acquisitions and Integration, approved the acquisition strategy for awarding the Space, Ground, and Gateway Segment development efforts required for the EMD Phase. The MTA is scheduled to transition to a Major Capability Acquisition (MCA) in 3QFY24, in order to continue PTS-P in the Prototype Phase and initiate PTS-R in the EMD Phase.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PTS-P Development (Hosted)	C/FFP	Boeing : El Segundo, CA	-	35.804	Nov 2022	31.497	Oct 2023	13.110	Oct 2024	-		13.110	0.000	80.411	-
PTS-P Development (Free-Flyer)	C/FFP	Northrop Grumman : Redondo Beach, CA	-	114.243	Nov 2022	41.920	Oct 2023	44.049	Oct 2024	-		44.049	Continuing	Continuing	-
Space Hub End Cryptographic Unit (ECU)	C/CPIF	L3Harris East : Camden, NJ	-	9.861	Jan 2023	4.330	Oct 2023	3.500	Oct 2024	-		3.500	0.000	17.691	-
NSA (ECU Support)	MIPR	TBD : TBD	-	1.859	Mar 2023	1.427	Oct 2023	1.400	Oct 2024	-		1.400	Continuing	Continuing	-
PTS-P Ground Segment Development MMS/KMS	C/FFP	Boeing : El Segundo, CA	-	-		12.934	Nov 2023	17.760	Nov 2024	-		17.760	Continuing	Continuing	-
PTS-P Ground Segment Development - CNPS	MIPR	TBD : TBD	-	1.025	May 2023	5.223	Nov 2023	2.759	Nov 2024	-		2.759	Continuing	Continuing	-
PTS-P Ground Segment Development - WSTARS	MIPR	TBD : TBD	-	2.574	Jul 2023	0.100	Nov 2023	0.100	Nov 2024	-		0.100	Continuing	Continuing	-
PTS-P Gateway Segment Development	Various	Various : Various	-	7.567	Oct 2022	5.420	Oct 2023	3.000	Oct 2024	-		3.000	0.000	15.987	-
PTS-R EMD Phase - Payload Development	TBD	TBD : TBD	-	-		154.610	Mar 2024	162.124	Oct 2024	-		162.124	Continuing	Continuing	-
PTS-R EMD Phase - ECU	TBD	TBD : TBD	-	-		1.161	Mar 2024	-		-		-	Continuing	Continuing	-
PTS-R EMD Phase - Ground/Gateway Development	TBD	TBD : TBD	-	-		5.504	Mar 2024	-		-		-	Continuing	Continuing	-
Protected Tactical Testbed	Various	Various : Various	-	9.100	Dec 2022	8.400	Nov 2023	8.200	Nov 2024	-		8.200	Continuing	Continuing	-
JSEC (Protected Tactical Testbed Support)	MIPR	TBD : TBD	-	3.699	Jan 2023	3.340	Nov 2023	3.340	Nov 2024	-		3.340	Continuing	Continuing	-
Technical Baseline Management and System Integration Test Support	Various	Various : Various	-	3.746	Nov 2022	19.797	Oct 2023	22.031	Oct 2024	-		22.031	Continuing	Continuing	-
Technical Mission Analysis (TMA)	RO	Aerospace : El Segundo, CA	-	14.781	Nov 2022	23.463	Jan 2024	22.736	Jan 2025	-		22.736	Continuing	Continuing	-
Enterprise SE&I	Various	Various : Various	-	23.591	Jan 2023	14.630	Oct 2023	13.981	Oct 2024	-		13.981	Continuing	Continuing	-
SBIR/STTR	TBD	TBD : TBD	-	-		12.604	Mar 2024	12.564	Mar 2025	-		12.564	Continuing	Continuing	-
		Subtotal	-	227.850		346.360		330.654		-		330.654	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force			Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	MIPR	Aerospace : El Segundo, CA	-	2.124	Nov 2022	2.933	Jan 2024	2.912	Jan 2025	-		2.912	0.000	7.969	-
A&AS	Various	Various : Various	-	8.320	Nov 2022	10.733	Nov 2023	15.283	Nov 2024	-		15.283	0.000	34.336	-
Other Support	Various	Various : Various	-	0.120	Nov 2022	0.100	Jan 2024	0.150	Oct 2024	-		0.150	0.000	0.370	-
		Subtotal	-	10.564		13.766		18.345		-		18.345	0.000	42.675	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	238.414		360.126		348.999		-		348.999	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

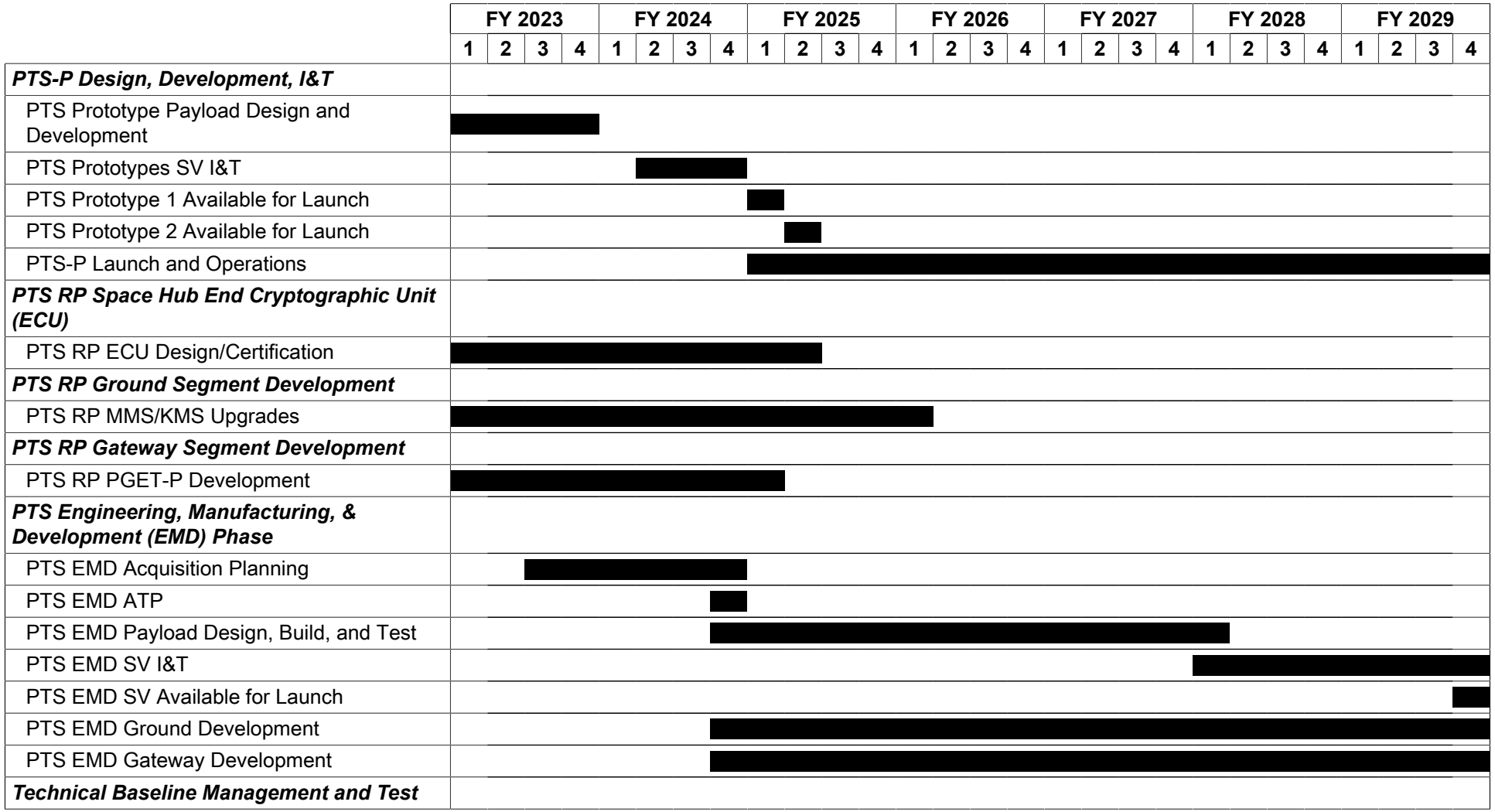

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

	FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
	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
System Integration Test Support/Protected Tactical Testbed																												

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1206761SF / *Protected Tactical Service (PTS)*	**Project (Number/Name)** 643728 / *Protected Tactical SATCOM*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PTS-P Design, Development, I&T				
PTS Prototype Payload Design and Development	1	2023	4	2023
PTS Prototypes SV I&T	2	2024	4	2024
PTS Prototype 1 Available for Launch	1	2025	1	2025
PTS Prototype 2 Available for Launch	2	2025	2	2025
PTS-P Launch and Operations	1	2025	4	2029
PTS RP Space Hub End Cryptographic Unit (ECU)				
PTS RP ECU Design/Certification	1	2023	2	2025
PTS RP Ground Segment Development				
PTS RP MMS/KMS Upgrades	1	2023	1	2026
PTS RP Gateway Segment Development				
PTS RP PGET-P Development	1	2023	1	2025
PTS Engineering, Manufacturing, & Development (EMD) Phase				
PTS EMD Acquisition Planning	3	2023	4	2024
PTS EMD ATP	4	2024	4	2024
PTS EMD Payload Design, Build, and Test	4	2024	1	2028
PTS EMD SV I&T	1	2028	4	2029
PTS EMD SV Available for Launch	4	2029	4	2029
PTS EMD Ground Development	4	2024	4	2029
PTS EMD Gateway Development	4	2024	4	2029
Technical Baseline Management and Test				
System Integration Test Support/Protected Tactical Testbed	1	2023	4	2029