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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206432SF / <i>Polar MILSATCOM (SPACE)</i>
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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	193.076	65.028	73.757	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	331.861
654215: <i>EPS Recap</i>	193.076	65.028	73.757	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	331.861
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 121

**Note**  
 PE 1206432SF (Polar MILSATCOM Space)/Project 654215 EPS Recap funding completed in FY 2024. Due to additional launch delays from the payload host, payload on-orbit testing, operational utility evaluation, and operations acceptance will occur in FY 2025. EPS-R procured Family of Advanced Beyond Line-of-Sight Terminals (FAB-Ts) software will be developed and certified in FY 2024 with terminal installation and checkout occurring in FY 2025.

**A. Mission Description and Budget Item Justification**  
 This program element acquires the Polar Military Satellite Communications (MILSATCOM) system that provides protected communications (anti-jam and low probability of intercept and detection) for users in the North Polar Region.

In FY 2006, the Department of Defense (DoD) began funding Enhanced Polar System (EPS). The host spacecraft and the polar communications packages took advantage of the Advanced Extremely High Frequency (AEHF) technology including the extended Data Rate (XDR) waveform. The EPS Capability Development Document (CDD), approved by the Joint Requirements Oversight Council in September 2006, is based on a two-package, hosted XDR program with operational availability in CY 2015 and CY 2017. EPS is comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office). Milestone B review was completed April 2, 2014.

In FY 2019, the United States Air Force (USAF) and Norwegian Ministry of Defense signed the Arctic Memorandum of Agreement (MOA), which enforces the international collaboration with Norway to host two EPS-Recapitalization (EPS-R) payloads on Space Norway-procured spacecraft. EPS-R continues to develop and acquire two Extremely High Frequency (EHF) payloads hosted on Space Norway-procured spacecraft and to upgrade/modify the existing EPS Ground Control and Gateway.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Polar MILSATCOM 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 program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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<b>Appropriation/Budget Activity</b> 3620F: Research, Development, Test & Evaluation, Space Force I BA 5: System Development & Demonstration (SDD)		<b>R-1 Program Element (Number/Name)</b> PE 1206432SF I Polar MILSATCOM (SPACE)				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	
Previous President's Budget	67.215	73.757	0.000	0.000	0.000	
Current President's Budget	65.028	73.757	0.000	0.000	0.000	
Total Adjustments	-2.187	0.000	0.000	0.000	0.000	
• 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	-2.187	0.000				
• Other Adjustments	0.000	0.000	0.000	0.000	0.000	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> Space Segment				20.651	22.366	0.000
<b>Description:</b> Develop and acquire two EHF payloads, using AEHF's XDR waveform, for integration on host spacecraft.						
<b>FY 2024 Plans:</b> Finalize coordination between Space Norway, space vehicle vendor, and payload contractor. Provide representation, technical expertise, and assistance as necessary at space vehicle vendor facilities to support activities including payload integration, testing, and deficiency resolution as needed. Support segment and system level testing. Lead launch activities including launch base processing, rehearsals, initialization, calibrations, testing and activation of the EPS-R payloads. Complete cyber certification and evaluation efforts. Manage readiness of the Engineering Model Test Bed, Hosted Payload Interface Unit, XDR Processing Unit test beds, flight software and databases.						
<b>FY 2025 Plans:</b> N/A						
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 decreased due to program funding ending in FY 2024.						
<b>Title:</b> Ground Updates				35.374	45.549	0.000
<b>Description:</b> Modify and upgrade the existing EPS Control and Planning Segment (CAPS) to provide command and control and XDR mission planning capability for the two new payloads.						
<b>FY 2024 Plans:</b>						

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p>Complete on-orbit testing with EPS CAPS. Complete efforts with Defense Information Systems Agency (DISA) on ground nodes to provide out-of-band connectivity to the EPS-R payload as well as in-band connectivity between EPS-R ground nodes. Provide representation, technical expertise, and assistance as necessary at Space Norway and/or space vehicle vendor facilities to support activities including payload integration and ground to payload testing. Support segment and system level testing. Complete cyber certification and evaluation efforts. Provide updates, fixes, and retests to ground software deficiencies found in Site Acceptance Testing and On-orbit Testing. Complete CAPS integration activities with the Family of Advanced Beyond Line-of-Sight Terminals (FAB-Ts). 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, etc.</p> <p><b>FY 2025 Plans:</b> N/A</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 decreased due to program funding ending in FY 2024.</p>				
<p><b>Title:</b> Gateway Updates</p> <p><b>Description:</b> Modify and upgrade the existing EPS Gateway to support the two new payloads.</p> <p><b>FY 2024 Plans:</b> Complete EPS Gateway upgrades, segment, and system integration testing. Complete terminal support as required by System-level or Integration tests. Complete software modifications for FAB-Ts and install the two FAB-T terminals and towers/shelters to augment the two aging T&amp;C-T at Clear Space Force Station.</p> <p><b>FY 2025 Plans:</b> N/A</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 decreased due to program funding ending in FY 2024.</p>		9.003	5.842	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		65.028	73.757	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				

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**E. Acquisition Strategy**  
Awarded payloads contract to Northrop Grumman Aerospace Systems (NGAS) and initiated fabrication of two EPS functional-equivalent payloads in FY 2018. In FY 2019, the USAF and Norwegian Ministry of Defence signed the Arctic Memorandum of Agreement, which enforces the international collaboration with Norway to host the two EPS-R payloads on the Space Norway-procured spacecraft. Conducted market research to identify industry capabilities and acquisition concepts. Awarded CAPS contract for EPS ground upgrade. Gateway updates will be accomplished by Naval Information Warfare Center Pacific, the EPS Gateway Segment developer. The program office initiates the procurement of a replacement terminal for the Telemetry and Command Terminal. This acquisition strategy updates the EPS Ground Segment to accommodate the EPS functional equivalent payloads and extend operations and sustainment beyond CY 2028. The U.S. Government will retain the system integrator role, as it was for EPS program of record.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3620F / 5				PE 1206432SF / Polar MILSATCOM (SPA CE)				654215 / EPS Recap							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
EPS-R Tactical Payloads	SS/CPIF	NGAS : Redondo Beach, CA	80.317	16.878	Nov 2022	19.335	Nov 2023	-		-		-	0.000	116.530	505.355
EPS-R Control and Planning Segment Upgrades	SS/CPIF	NGMS : Redondo Beach, CA	45.880	28.911	Nov 2022	36.792	Nov 2023	-		-		-	0.000	111.583	115.710
EPS-R Gateway Upgrades	Various	Various : Various, CA	19.404	7.358	Nov 2022	5.050	Nov 2023	-		-		-	0.000	31.812	68.895
EPS-R SBIR/STTR	TBD	Various : Various, CA	0.000	-		2.581		-		-		-	0.000	2.581	-
EPS-R Technical Mission Analysis	RO	Aerospace : El Segundo, CA	10.794	1.815	Nov 2022	1.835	Nov 2023	-		-		-	0.000	14.444	-
EPS-R Enterprise SE&I	C/CPAF	LinQuest : Los Angeles, CA	30.476	6.955	Nov 2022	5.000	Nov 2023	-		-		-	0.000	42.431	-
<b>Subtotal</b>			186.871	61.917		70.593		-		-		-	0.000	319.381	N/A
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
EPS-R FFRDC	RO	Aerospace : El Segundo, CA	1.544	-		-		-		-		-	0.000	1.544	-
EPS-R A&AS	Various	Various : Various	4.447	2.961	Oct 2022	3.014	Oct 2023	-		-		-	0.000	10.422	-
EPS-R Other Support	Various	Various : Various	0.214	0.150	Oct 2022	0.150	Oct 2023	-		-		-	0.000	0.514	-
<b>Subtotal</b>			6.205	3.111		3.164		-		-		-	0.000	12.480	N/A
<b>Project Cost Totals</b>			193.076	65.028		73.757		-		-		-	0.000	331.861	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3620F / 5	<b>R-1 Program Element (Number/Name)</b> PE 1206432SF / <i>Polar MILSATCOM (SPA CE)</i>	<b>Project (Number/Name)</b> 654215 / <i>EPS Recap</i>

	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
<b>Space Segment</b>																												
International Collaboration w/Norway	████████████████████																											
Space Vehicle Integration/Test/Check-out	████████████████████																											
<b>Ground and Gateway Upgrades/ Modifications</b>																												
Risk Reduction Activities/Studies	████████████████████																											
Acquire Telemetry and Control Terminals	████████████████████																											
Upgrades/Modifications	████████████████████																											
System Level Integration and Test	████████████████████																											
Control Terminal Installation					████████████████																							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3620F / 5	<b>R-1 Program Element (Number/Name)</b> PE 1206432SF / <i>Polar MILSATCOM (SPA CE)</i>	<b>Project (Number/Name)</b> 654215 / <i>EPS Recap</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Space Segment</b>				
International Collaboration w/Norway	1	2023	3	2024
Space Vehicle Integration/Test/Check-out	1	2023	4	2024
<b>Ground and Gateway Upgrades/Modifications</b>				
Risk Reduction Activities/Studies	1	2023	2	2024
Acquire Telemetry and Control Terminals	1	2023	2	2024
Upgrades/Modifications	1	2023	4	2024
System Level Integration and Test	1	2023	4	2024
Control Terminal Installation	1	2024	4	2024

**Note**

Due to additional launch delays from the payload host, payload on-orbit testing, operational utility evaluation, and operations acceptance will occur in FY 2024.