Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force											Date: March 2023	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1203182SF / *Spacelift Range System (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	30.294	11.608	11.175	0.000	11.175	10.797	11.036	11.261	11.669	Continuing	Continuing
674137: *Launch and Test Range System (LTRS) Modernization*	-	30.294	11.608	11.175	0.000	11.175	10.797	11.036	11.261	11.669	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Spacelift Range System (SLRS), also known as the Launch and Test Range System (LTRS), provides public safety and assured access to space. LTRS operates at the Eastern Range (ER) at Patrick SFB/Cape Canaveral SFS, FL and the Western Range (WR) at Vandenberg SFB, CA. LTRS provides tracking, telemetry, communications, flight safety, and other capabilities to support launch of national security space (NSS), civil and commercial space payloads, Intercontinental and Sea Launched ballistic missile and missile defense evaluations, and aeronautical and guided weapon tests. LTRS ensures ability to meet the national launch requirement, safely supports the launch cadence of ER/WR launch requirement holders and provides assured access to space for the nation. The ER and WR are designated as Department of Defense Major Range and Test Facility Bases (MRTFB).

LTRS is comprised of 12 subsystems that together provide this capability to the ranges. The Range Safety, Command Destruct, and Positive Control subsystems provide the capability to destroy an errant rocket, if necessary to protect public safety. These subsystems rely on the Telemetry, Radar, and Optics subsystems to provide tracking data. The Weather and Surveillance subsystems allow range operators and customers to determine if conditions are safe for launch. The Communications, Data Handling, and Timing & Sequencing subsystems ensure critical data is expeditiously routed from remote sensors (e.g., radars, optics) to range operators and customers. Finally, the Planning and Scheduling subsystem ensures all assets are available when needed for a launch or test operation.

The Space Force requires RDT&E funds to conduct LTRS Digital Transformation studies and prototype experimentation activities to meet evolving technological requirements. Funds will provide engineering analyses for insertion of promising technology, provide opportunity to test Cloud infrastructure and software development strategies to drive state-of-the-art applications into LTRS development, validate pathfinder concepts to meet an accelerating launch capacity and cadence, improve system cyber survivability and resilience, and continue to evaluate promising technology beyond current industry standards. Digital Transformation envisions a future driving configuration and reconfiguration automation and system autonomy into LTRS operations for seamless launch and return operations and accelerate capability to Range users through adoption of modern systems, infrastructure, platforms and processes.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver LTRS 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.

Space acquisition must respond with speed and agility to pacing and emerging adversary threats. Space Systems Command (SSC) has transformed the organization and implementation of space acquisition to an enterprise approach, to increase innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate

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acquisition authorities and contract mechanisms to deliver capability sooner, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose existing capabilities.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	31.115	11.658	11.199	0.000	11.199
Current President's Budget	30.294	11.608	11.175	0.000	11.175
Total Adjustments	-0.821	-0.050	-0.024	0.000	-0.024
• Congressional General Reductions	0.000	-0.050			
• 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	-0.821	0.000			
• Other Adjustments	0.000	0.000	-0.024	0.000	-0.024

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 674137: *Launch and Test Range System (LTRS) Modernization*		
Congressional Add: *Space Launch and Services Capability*	19.472	-
Congressional Add Subtotals for Project: 674137	19.472	-
Congressional Add Totals for all Projects	19.472	-

Change Summary Explanation

FY 2022: -0.821M for SBIR/STRR Transfer

FY 2023: -0.050M Congressional reduction for undistributed FFRDC funding

FY 2024: -0.024M net reduction includes -0.074M to realign funding to APPN 3410, PE 1207804SF (SAG 13C), for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity; 0.050M for inflation adjustment

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Enterprise Systems Engineering and Integration to Support Government-Controlled Baseline	2.080	2.240	2.050
Description: SE&I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&I will develop and recommend investment strategies to keep the Eastern and Western Ranges operating well beyond the FYDP. ***FY 2023 Plans:*** Increase system resiliency and agility to meet National launch capacity and cadence requirements per Chief of Space Operations' Range of the Future (ROTF) agility to meet National launch requirements. Invest in Cloud infrastructure and software development to deliver prototype Range operations concepts focused on increasing space launch capability and sustainment of MRTFB capability. Implement system resiliency and situational awareness necessary to operate in the contested space domain. Continuing activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2024 Plans:*** Continue to explore promising technology and concepts to add resiliency and agility to the LTRS fielded baseline to meet National launch capacity and cadence requirements envisioned by ROTF. Seek pathfinding and experimentation in Cloud infrastructure and software delivery pipeline concepts to prototype Range operations approaches, which will feed Digital Transformation of LTRS and accelerate capability to Range users through space access industry standard technology and sustain MRTFB capability. Implement system resiliency, survivability, and situational awareness necessary to operate in the contested space domain and address ever-expanding cyber threats. Continuing activities including, but not limited to, program office support, studies, technical analyses, experimentation, prototyping, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased slightly from FY 2023 due to minor decreases in studies.			
Title: LTRS Range Technology Integration	8.742	9.368	9.125
Description: Provides Advisory and Assistance Services (A&AS) support of the operational baseline (all twelve subsystems) to include configuration management of all range assets, requirements analyses, and special studies. Provides support for Systems Program Office operations, Systems Engineering and Technical Assistance (SETA), and Federally Funded Research and Development Centers (FFRDC). Strategically executes experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities. ***FY 2023 Plans:***			

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Analyze, engineer and prototype ROTF concepts to include Cloud infrastructure and software factory prototypes. Development services will prototype data-driven applications to provide agile flight vehicle situational awareness as well as automation of LTRS equipment to facilitate rapid range reconfiguration and enable conduct of simultaneous launch operations. Implement system resiliency and situational awareness necessary to operate in the contested space domain by deploying a Dev/Sec/Ops capability and supporting software Minimum Viable Product (MVP) via a continuous integration/continuous delivery strategy. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2024 Plans:*** Continue efforts to analyze, engineer, and prototype ROTF envisioned agility and resiliency through a Digital Transformation strategy via adoption of modern systems, infrastructure, platforms, and processes; includes research associated with Cloud infrastructure and software factory concepts. Development support services will facilitate prototypes and data-driven applications to accelerate capabilities to range users such as agile Range situational awareness and LTRS equipment automation to facilitate rapid range reconfiguration and continued expansion of capability to conduct simultaneous launch operations. Develop and prove Dev/Sec/Ops capability as a viable approach for deploying LTRS system applications and software in a continuous integration/continuous delivery methodology. Implement system resiliency and situational awareness necessary to operate in a contested space and cyber domain. Activities include, but are not limited to, program office support, studies, technical analyses, experimentation, prototyping, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased slightly from FY 2023 due to slight decrease in A&AS support.			
Accomplishments/Planned Programs Subtotals	10.822	11.608	11.175

	FY 2022	FY 2023
Congressional Add: Space Launch and Services Capability	19.472	-
FY 2022 Accomplishments: Congressional Add Funding improved commercial spaceport capability to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space at Pacific Spaceport Complex, AK and Mid-Atlantic Regional Spaceport, Wallops Island, VA.		
Congressional Adds Subtotals	19.472	-

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• SPSF 01 1203182SF: *Spacelift Range System (Space)*	93.774	71.712	114.505	-	114.505	108.470	108.477	111.233	113.568	Continuing	Continuing

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost

Remarks

E. Acquisition Strategy

The Launch and Test Range System (LTRS) program acquisition strategy is system Modernization and Digital Transformation to ensure continued enabling of the accelerating National launch cadence executing on the Eastern Range (ER) and Western Range (WR). This strategy addresses the US Space Force Range of the Future (ROTF) envisioned Range instrumentation architecture, one of multiple ROTF lines of effort. The LTRS program is focused on developing a scalable system capable of responding to the demands of National Security Space objectives and DoD test and evaluation needs as well as assuring the Nation's ability to access space. Innovative development and employment of Cloud infrastructure, software factory and software development services, and cyber security strategies to facilitate data-driven Range activities, digital processing, and data distribution capability is targeted as the enabling strategy for the ROTF Architectural line of effort. Promising prototypes and technology will be accelerated into the LTRS architecture via investments aimed at inserting on-demand increased operational capacity and state-of-the-practice data formatting and transport to launch operations. Contracted engineering and integration services innovate promising technology into the system technical baseline and manage the LTRS specifications and technical requirements on behalf of the government. Additionally, engineering services acts as integrator for completed LTRS modernization projects. Federally Funded Research and Development Center (FFRDC) provides critical mission technical and cyber security analysis capability to ensure LTRS assets meet operational needs.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203182SF / *Spacelift Range System (SPACE)*	**Project (Number/Name)** 674137 / *Launch and Test Range System (LTRS) Modernization*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Enterprise Systems Engineering and Integration	C/FPIF	ENSCO INC : Falls Church, VA	-	2.080	Oct 2021	2.240	Oct 2022	2.050	Oct 2023	-		2.050	Continuing	Continuing	-
LTRS Range of the Future (ROTF) Technology Integration	C/Various	Various : Various	-	6.505	May 2022	7.090	May 2023	6.812	May 2024	-		6.812	Continuing	Continuing	-
SBIR/STTR	TBD	TBD : TBD	-	-		-		0.039	May 2024	-		0.039	Continuing	Continuing	-
		Subtotal	-	8.585		9.330		8.901		-		8.901	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AK Spaceport Infrastructure Support	SS/FFP	Alaska Aerospace Corp : Anchorage, AK	-	9.500	Jul 2022	-		-		-		-	0.000	9.500	-
VA Spaceport Infrastructure Support	SS/FFP	VA Comm Space Flt Auth : Norfolk, VA	-	9.500	Jul 2022	-		-		-		-	0.000	9.500	-
Spaceport Concept Analysis	SS/CPFF	AS&D, LLC : Beltsfield, MD	-	0.472	Sep 2022	-		-		-		-	0.000	0.472	-
		Subtotal	-	19.472		-		-		-		-	0.000	19.472	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace : El Segundo, CA	-	0.647	Nov 2021	0.659	Nov 2022	0.573	Nov 2023	-		0.573	Continuing	Continuing	-
OTHER SUPPORT	PO	Various : El Segundo, CA	-	1.590	Nov 2021	1.619	Nov 2022	1.701	Nov 2023	-		1.701	Continuing	Continuing	-
		Subtotal	-	2.237		2.278		2.274		-		2.274	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force			Date: March 2023
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	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	30.294		11.608		11.175		-		11.175	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203182SF / *Spacelift Range System (SPACE)*	**Project (Number/Name)** 674137 / *Launch and Test Range System (LTRS) Modernization*

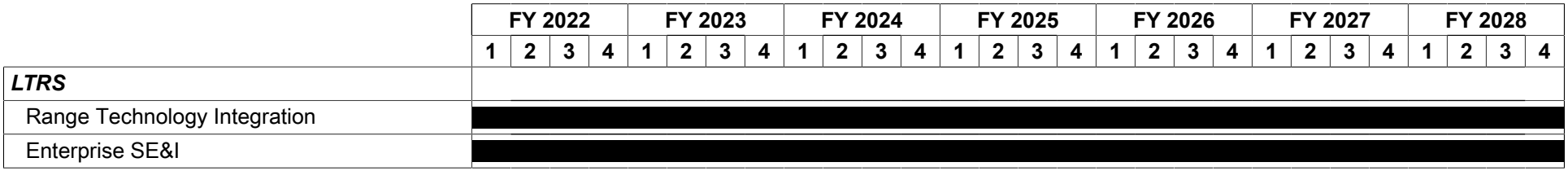

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1203182SF / *Spacelift Range System (SPACE)*	**Project (Number/Name)** 674137 / *Launch and Test Range System (LTRS) Modernization*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
LTRS				
Range Technology Integration	1	2022	4	2028
Enterprise SE&I	1	2022	4	2028