Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force											Date: February 2020	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1203182F / *Spacelift Range System (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	20.168	5.837	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
674137: *Launch and Test Range System (LTRS) Modernization*	-	20.168	5.837	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2021, PE 1203182F, Spacelift Range System,(Space) efforts were transferred to Appropriations 3620, Research, Development, Test & Evaluation, Space Force, PE 1203182SF Spacelift Range System (Space) from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriations for Space Force.

FY 2020 received a Congressional mark that increases by $10M for space launch services. That increase and enacted request was not accounted for correctly in the database and reflected a -$15M overall reduction. The correct total for LTRS in FY 2020 is $20.837M, not $5.837M.

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 AFB/Cape Canaveral AFS, FL and the Western Range (WR) at Vandenberg AFB, 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 enables national security, civil, and commercial spacelift operations to be conducted safely; together with national security space launch capability, LTRS 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 twelve subsystems that together provide this capability to the ranges. The Range Safety and Command Destruct 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 Air Force requires RDT&E funds to conduct digital data processing and transport prototype and proof of concept projects supporting Range of the Future (ROTF) launch operations. Funds will provide engineering and analysis to develop promising technology and validate LTRS architecture ability to meet the accelerating National launch requirement and introduce advanced data transport formats. These include demonstration of virtualized and remote data processing as well as dispersed and disaggregated flight tracking.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships,

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and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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 1206392F and 1206398F.

Funding in this exhibit was previously budgeted in PE 0305182F, Space Lift Range System.

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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	20.168	10.837	11.023	0.000	11.023
Current President's Budget	20.168	5.837	0.000	0.000	0.000
Total Adjustments	0.000	-5.000	-11.023	0.000	-11.023
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	10.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	-15.000	-11.023	0.000	-11.023

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2019	FY 2020
Project: 674137: *Launch and Test Range System (LTRS) Modernization*		
Congressional Add: *Launch Range Services and Capability*	10.000	0.000
Congressional Add Subtotals for Project: 674137	10.000	0.000
Congressional Add Totals for all Projects	10.000	0.000

Change Summary Explanation

FY2020: +$10M Congressional addition for space launch services and capability

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force	Date: February 2020
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FY2021: $11,020M; funds starting in FY2021 were transferred from RDT&E, Air Force to RDT&E Space Force.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: LTRS Range Technology Integration	6.260	2.237	0.000
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 2020 Plans:*** Continue to manage the baseline (all twelve subsystems) to include configuration management and all range assets, requirements, analysis and special studies. Fund Multi-Band Multi-Mission (MBMM) antenna prototyping effort to meet both Launch and Test Range and Air Force Satellite Control Network (AFSCN) requirements. MBMM is described in the AFSCN R-doc, PE 1203110F. ***FY 2021 Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** N/A			
Title: Enterprise Systems Engineering and Integration to Support Government-Controlled Baseline	3.908	3.600	0.000
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 2020 Plans:*** Continue program office support and other related support activities that may include, but are not limited to studies, technical analysis, prototyping, etc. ***FY 2021 Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:***			

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force	Date: February 2020
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
N/A			
Accomplishments/Planned Programs Subtotals	10.168	5.837	0.000

	FY 2019	FY 2020
Congressional Add: Launch Range Services and Capability	10.000	0.000
FY 2019 Accomplishments: N/A		
FY 2020 Plans: N/A		
Congressional Adds Subtotals	10.000	0.000

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• SPAF 01 Line Item SPRNGE: *Spacelift Range System Space*	117.637	118.140	-	-	-	-	-	-	-	Continuing	Continuing
• RDTE 07 1203110F: *Satellite Control Network (SPACE)*	26.374	56.891	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

SPAF 01 3021F SPRNGE Spacelift Range System Space Procurement document for FY19-FY21 is a United States Space Force document located in IDECS.

SPAF 01 3022F SPRNGE Spacelift Range System Space Procurement document for FY21-FY25 is a United States Space Force document located in CXE.

RDT&E 07 3620F Spacelift Range System Space RDT&E document for FY21-FY25 is a United States Space Force document located in CXE.

E. Acquisition Strategy

Due to fielded LTRS age and obsolescence issues, many systems need to be replaced (e.g. communications systems at ER and WR). These major modifications will be competed, typically among small business contractors, and selected through best value source selections. The competitively-selected SE&I contractor manages government controlled requirements and processes as well as provide support to the "government as the integrator" between LTRS Integrated Support Contract (LISC) and separately competed modernization projects. FFRDC provides mission assurance oversight to ensure capabilities meet operational need.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203182F / *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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Enterprise Systems Engineering and Integration	C/FPIF	ENSCO INC : Falls Church, VA	-	3.908	Oct 2018	3.600	Oct 2019	-		-		-	Continuing	Continuing	-
LTRS Range of the Future (ROTF) Technology Integration	C/Various	Various : TBD	-	0.636	May 2019	1.552	May 2020	-		-		-	Continuing	Continuing	-
MBMM Prototyping	MIPR	Defense Innovation Unit : Mountain View, CA	-	4.731	Mar 2019	-		-		-		-	Continuing	Continuing	-
Launch Range Services and Capability	MIPR	NASA : Wallops, VA	-	9.771	Mar 2019	0.000	Mar 2020	-		-		-	Continuing	Continuing	-
		Subtotal	-	19.046		5.152		-		-		-	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
TEST AND EVALUATION (WS)	Various	MIT, 17th Test Squad, NAVAIR : Various	-	0.665	Apr 2019	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	0.665		-		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
FFRDC	RO	Aerospace : El Segundo, CA	-	0.457	Nov 2018	0.471	Nov 2019	-		-		-	Continuing	Continuing	-
OTHER SUPPORT	PO	Various : El Segundo, CA	-	-		0.214	Nov 2019	-		-		-	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	0.457		0.685		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	20.168		5.837		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203182F / *Spacelift Range System (SPACE)*	**Project (Number/Name)** 674137 / *Launch and Test Range System (LTRS) Modernization*

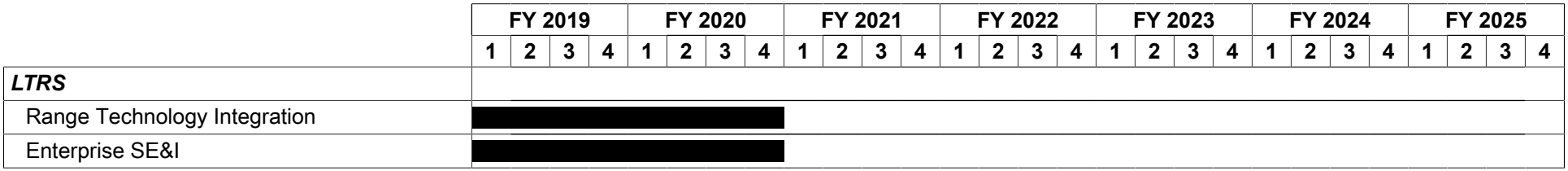

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1203182F / *Spacelift Range System (SPACE)*	**Project (Number/Name)** 674137 / *Launch and Test Range System (LTRS) Modernization*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
LTRS				
Range Technology Integration	1	2019	4	2020
Enterprise SE&I	1	2019	4	2020