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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3620F: <i>Research, Development, Test & Evaluation, Space Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1206853SF / <i>National Security Space Launch Program (SPACE) - EMD</i>
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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	-	195.093	232.648	82.188	0.000	82.188	23.351	7.277	2.823	4.317	0.000	547.697
650006: <i>Next Generation Launch System Investment</i>	-	195.093	232.648	82.188	0.000	82.188	23.351	7.277	2.823	4.317	0.000	547.697
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Prior Years Funding \$2,089.431M was executed in PE 1206853F.

A. Mission Description and Budget Item Justification

The National Security Space Launch (NSSL) program provides a space launch service that satisfies the government's National Launch Forecast (NLF) requirements to place National Security Space (NSS) space vehicles on orbit. NSSL is a launch service, not a weapon system, which is primarily funded with production funds.

NSSL Phase 2 development, started late FY 2014, funds research and development activities and related studies, to include, but not limited to, investments in new and/or upgraded launch systems and associated launch facilities to meet NSS launch needs leveraging domestic commercial launch providers. The RDT&E program will also fund continued research and development activities, mission manifest capability development & future studies for emerging NSS launch needs. These efforts will develop technologies for space access, mobility, and logistics (SAML) through multiple public-private partnerships; help sustain the U.S. industrial base; address emergent needs for launch-related space access and lower procurement costs by promoting competition. Examples include, but are not limited to, orbital transfer, on-orbit servicing, digital engineering, debris removal and novel on-orbit propulsion technologies.

The Space Force will continue investments in the Launch Service Agreement (LSA) public-private partnership with United Launch Alliance Vulcan Centaur for launch system development. In addition, the Space Force will complete rocket propulsion system (RPS) with Aerojet Rocketdyne for the RL10 upper stage engine development and the associated technical maturation program. Future development to capitalize on new technology and innovations developed by industry may continue to utilize public-private partnerships. The Space Force will also be leveraging opportunities to integrate Department of Defense payloads on to launch services procured commercially or by other Government agencies (e.g. NASA) where excess margin is available.

Space acquisition must respond with speed and agility to emerging adversary threats. Space Systems Command (SSC) is transforming 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 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 element may include necessary civilian pay expenses required to manage, execute, and deliver NSSL system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

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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.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	201.510	124.103	82.361	0.000	82.361
Current President's Budget	195.093	232.648	82.188	0.000	82.188
Total Adjustments	-6.417	108.545	-0.173	0.000	-0.173
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	110.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-6.417	0.000			
• Other Adjustments	0.000	-1.455	-0.173	0.000	-0.173

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 650006: Next Generation Launch System Investment

Congressional Add: NSSL Payload Processing Facility

Congressional Add: Space Mobility and Logistics

Congressional Add Subtotals for Project: 650006

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	-	80.000
	-	30.000
Congressional Add Subtotals for Project: 650006	-	110.000
Congressional Add Totals for all Projects	-	110.000

Change Summary Explanation

FY 2024: -0.541M 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.

FY 2023: -1.455M GCR FFRDC. +110.000M Congressional Add.

FY 2022: -6.417M for SBIR/STTR Transfer

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2022	FY 2023	FY 2024
Title: NSSL Enabling Investments	16.871	0.000	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Enabling Investments are a continuous portfolio of RDT&E projects that will increase U.S. space dominance through the end of the decade and beyond. The portfolio consists of multiple public-private partnerships to develop technologies for space access, mobility, and logistics (SAML). Examples include, but are not limited to, orbital transfer, on-orbit servicing, digital engineering, and novel on-orbit propulsion technologies.</p> <p>FY 2023 Plans: N/A</p> <p>FY 2024 Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: N/A</p>				
<p>Title: Launch Service Agreement</p> <p>Description: Invest in providers of domestic Launch Services. This investment enables the transition from the use of non-Allied space launch engines to commercial launch services that also meet NSS needs. Execute Other Transaction Authority (OTA) agreements to develop various industry solutions utilizing public-private partnerships. Continue the technical maturation and risk reduction activities in support of Launch Service OTAs.</p> <p>FY 2023 Plans: Continue NSSL Phase 2 public-private partnership investment with United Launch Alliance (ULA) for the development of the Vulcan Centaur launch system. This investment includes continued development for the heavy lift (Category C) capability of the Vulcan Centaur, including Design Certification Review, and continued West Coast space launch complex improvements. Additionally, FY 2023 funding will allow the program 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.</p> <p>FY 2024 Plans: Continue NSSL Phase 2 public-private partnership investment with United Launch Alliance (ULA) for the development of the Vulcan Centaur launch system. This investment includes continued development for the heavy lift (Category C) capability of the Vulcan Centaur, including Design Certification Review, and complete the West Coast space launch complex improvements. Additionally, FY 2024 funding will allow the program to rapidly respond to implement system resiliency and situational awareness</p>		171.886	122.648	82.188

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
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 2023 to FY 2024 Increase/Decrease Statement: FY 2023 to FY 2024 decrease due to ramp down of Vulcan development and fewer milestone payments.			
Title: Rocket Propulsion System Development Description: Invest in domestic rocket propulsion systems (RPS) under the Launch Service Agreement Other Transaction Authority (OTA) agreements. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Continue to execute a single RPS OTA agreement utilizing a public-private partnership. FY 2023 Plans: N/A FY 2024 Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: N/A	6.336	0.000	0.000
Accomplishments/Planned Programs Subtotals	195.093	122.648	82.188

	FY 2022	FY 2023
Congressional Add: NSSL Payload Processing Facility FY 2023 Plans: Development of payload processing capabilities to support National Security payload processing to support launches from the Eastern Range	-	80.000
Congressional Add: Space Mobility and Logistics FY 2023 Plans: Investments leverage near-term operational capabilities of commercial services and residual RDT&E capacity, which enhance the National Security Space mission area. Funding exploits commercial Space Maneuver and Servicing (SMS) systems already operationally employed and accelerates the development of maneuver and refueling capability in support of Dynamic Space Operations and other operational requirements. Examples include, but are not limited to, SMS capabilities, on-orbit deployment of enabling and transformational technologies, and in-space transportation.	-	30.000
Congressional Adds Subtotals	-	110.000

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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPSF 01 NSSL00: <i>National Security Space Launch</i>	1,287.347	1,024.803	2,142.846	-	2,142.846	2,187.077	2,066.860	2,194.791	2,222.690	1,301.200	14,427.614

Remarks

E. Acquisition Strategy

Launch Enterprise will continue execution of NSSL Phase 2 Public-Private Partnership investments and NSSL Enabling Investments, including those for Next Generation Rocket Engine Testing and Upper Stage Resiliency Enhancements. Phase 2 consists of RDT&E investment in commercial launch system prototypes developed via the Space Force's Launch Service Agreements (LSAs) and Rocket Propulsion System (RPS) Other Transaction Authority (OTA) agreements to ensure two domestic launch service providers are certified to meet all NSS requirements. Phase 2 ends the use of the Russian RD-180 engine and leverages the U.S. launch industry to meet more stressing national security needs. This strategy ensures space launch operations meet requirements for Assured Access to Space (AATS) codified in 10 USC 2273 and Congressional direction to end U.S. reliance on non-allied propulsion systems. Enabling Investments, initiated by FY 2021 Congressional Adds and continued in FY 2022, are developing advanced space access capabilities to sustain competition for launch services starting in FY 2025 per the NSSL Phase 3 acquisition strategy. Development activities foster a robust launch industrial base and leverage launch innovation to maintain American leadership in launch capabilities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3620F / 5	R-1 Program Element (Number/Name) PE 1206853SF / National Security Space Launch Program (SPACE) - EMD	Project (Number/Name) 650006 / Next Generation Launch System Investment
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
RPS OTA	C/Variou	Aerogjet Rocketdyne : Canoga Park, CA	-	6.336	Nov 2021	-		-		-		-	0.000	6.336	-
LSA OTA1	C/Variou	United Launch Alliance : Denver, CO	-	132.124	Nov 2021	86.542	Nov 2022	56.660	Nov 2023	-		56.660	Continuing	Continuing	-
LNG/LOX Characterization Testing	Variou	Various : Various	-	-		-		6.249	Dec 2023	-		6.249	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	14.286	Dec 2021	10.919	Dec 2022	2.730	Dec 2023	-		2.730	Continuing	Continuing	-
Enterprise System Engineering and Integration (SE&I)	C/CPFF	Various : Various	-	10.596	Nov 2021	10.024	Nov 2022	1.551	Nov 2023	-		1.551	Continuing	Continuing	-
NSSL Enabling Investments Orbital Transfer & Maneuver (OTM)	C/Variou	Various : Various	-	16.871	Jun 2022	-		-		-		-	0.000	16.871	-
RDT&E SBIR/STTR	TBD	TBD : TBD	-	-		-		2.539	Mar 2024	-		2.539	Continuing	Continuing	-
NSSL Payload Processing Facility	C/TBD	TBD : TBD	-	-		80.000	Sep 2023	-		-		-	Continuing	Continuing	-
Space Mobility and Logistics	C/Variou	TBD : TBD	-	-		30.000	Apr 2023	-		-		-	Continuing	Continuing	-
Subtotal			-	180.213		217.485		69.729		-		69.729	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Organic Civilian Support	Reqn	DOD : El Segundo, CA	-	2.079	Oct 2021	2.142	Oct 2022	2.206	Oct 2023	-		2.206	Continuing	Continuing	-
Subtotal			-	2.079		2.142		2.206		-		2.206	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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

<i>Rocket Propulsion System RPS Development</i>																												
Aerojet Rocketdyne RPS OTA																												
<i>Launch Service Agreement LSA</i>																												
United Launch Alliance (ULA) LSA OTA																												
ULA LSA OTA 1st Vulcan Flight																												
ULA LSA OTA West Coast Launch Pad Completion																												
<i>NSSL Enabling Investments</i>																												
Orbital Transfer & Maneuver (OTM)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Rocket Propulsion System RPS Development</i>				
Aerojet Rocketdyne RPS OTA	1	2022	4	2022
<i>Launch Service Agreement LSA</i>				
United Launch Alliance (ULA) LSA OTA	1	2022	4	2025
ULA LSA OTA 1st Vulcan Flight	1	2023	2	2023
ULA LSA OTA West Coast Launch Pad Completion	3	2024	3	2024
<i>NSSL Enabling Investments</i>				
Orbital Transfer & Maneuver (OTM)	3	2022	4	2023