

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	1,691.303	414.621	0.000	0.000	0.000	0.000	-	-	-	-	-	-
650006: <i>Next Generation Launch System Investment</i>	1,691.303	414.621	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 176

**Note**  
- Prior year funding shown in Cost Table includes FY 2014 - FY 2017 that was executed in Program Element (PE) 0604853F.

**A. Mission Description and Budget Item Justification**  
In FY 2021, PE 1206853F, National Security Space Launch Program efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206853SF, National Security Space Launch Program from Appropriation 3600, Budget Activity 05 due to the creation of a new Appropriation for Space Force.

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.

This program, started late FY 2014, funds research and development activities and related studies, to include, but not limited to, items necessary to invest 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 support future launch service development initiatives in order to continue sustained industry competition and provide emerging Space Force capabilities for a Phase 3 procurement planned for starting in FY 2025, and future procurements.

The Space Force is investing in Launch Service Agreement (LSA) public-private partnerships for the development of new and/or upgraded domestic launch systems with commercial launch service providers. The anticipated result is two domestic, commercial launch service providers that will meet all current NSS launch requirements. In addition, the Space Force is continuing a technical maturation program to address the highest risks for rocket propulsion system (RPS) and LSA development. Development of the required RPSs have continued under the LSA public-private partnerships. 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 (i.e. NASA) where excess margin is available.

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

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>
---	---

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, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or re-purpose 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.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	432.009	0.000	0.000	0.000	0.000
Current President's Budget	414.621	0.000	0.000	0.000	0.000
Total Adjustments	-17.388	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	-3.000	0.000			
• SBIR/STTR Transfer	-14.388	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY 2020 -3.000M decrease for higher Air Force Space priorities

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Rocket Propulsion System Development <b>Description:</b> 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.	28.045	-	-
<b>Title:</b> Launch Service Agreement <b>Description:</b> 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)	386.576	-	-

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>
---	---

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
agreements to develop various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities in support of Launch Service OTAs.			
<b>Accomplishments/Planned Programs Subtotals</b>	414.621	-	-

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• SPAF 01 Line Item MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	1,237.635	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 Line Item <i>MSEELC: Evolved Expendable Launch Capability</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

The Department intends to pursue a strategy to competitively invest in two or more domestic launch providers' development of new launch systems or upgrades to existing systems for future NSS launch services. This shared investment approach may also leverage commitments to a portion of the planned launch services (between FY 2020 and FY 2025) to decrease the required up front Government investment.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650006 / <i>Next Generation Launch System Investment</i>
--	---	--

<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aerojet Rocketdyne OTA	C/Various	Aerojet Rocketdyne : Canoga Park, CA	297.001	28.045	Oct 2019	-		-		-		-	-	-	-
United Launch Service RPS OTA	C/Various	United Launch Service : Centennial, CO	128.630	-		-		-		-		-	-	-	-
United Launch Service LSA OTA	C/Various	United Launch Service : Centennial, CO	256.605	85.768	Oct 2019	-		-		-		-	-	-	-
Orbital ATK OTA	C/Various	Orbital ATK : Magna, UT	168.714	-		-		-		-		-	-	-	-
Northrop Grumman OTA	C/Various	Northrop Grumman : Chandler, AZ	267.573	218.673	Oct 2019	-		-		-		-	-	-	-
Space X OTA	C/Various	Space X : Hawthorne, CA	97.844	-		-		-		-		-	-	-	-
Blue Origin OTA	C/Various	Blue Origin : Kent, WA	196.166	39.303	Mar 2020	-		-		-		-	-	-	-
AFRL Risk Reduction Study	C/Various	Various : various	7.074	-		-		-		-		-	-	-	-
NASA Risk Reduction Study	C/Various	Various : Various	0.000	2.000	Jul 2020	-		-		-		-	-	-	-
RAND Study	C/Various	Various : Various	1.261	-		-		-		-		-	-	-	-
Broad Agency Announcement Technical Maturation Studies	C/Various	Various : Various	37.390	-		-		-		-		-	-	-	-
NASA Advance Booster Engine Demonstration Risk Reduction (ABEDRR)	SS/ Various	Various : Various	40.374	-		-		-		-		-	-	-	-
Georgia Tech Combustion Stability Technical Maturation UARC	SS/ Various	Various : Various	7.948	-		-		-		-		-	-	-	-
NASA Combustion Stability Technical Maturation Study	SS/ Various	Various : Various	6.800	-		-		-		-		-	-	-	-

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 1206853F / National Security Space Launch Program (SPACE) - EMD				650006 / Next Generation Launch System Investment							
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
AFRL Combustion Stability Technical Maturation Study	SS/ Various	Various : Various	3.179	0.300	Aug 2020	-		-		-		-	-	-	-
AFRL Hydrocarbon Boost Technical Maturation Demonstration	SS/ Various	Various : Various	37.154	-		-		-		-		-	-	-	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	46.785	3.985	Mar 2020	-		-		-		-	-	-	-
Launch Enterprise System Engineering and Integration	C/FP	Various : Various	19.959	1.846	Mar 2020	-		-		-		-	-	-	-
Launch Service Agreement (Including the Rocket Propulsion System)	C/TBD	TBD : TBD	0.000	-		-		-		-		-	-	-	-
<b>Subtotal</b>			1,620.457	379.920		-		-		-		-	-	-	N/A
Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	4.864	1.960	Oct 2019	-		-		-		-	-	-	15.628
<b>Subtotal</b>			4.864	1.960		-		-		-		-	-	-	N/A
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
FFRDC	SS/CPAF	Aerospace : El Segundo, CA	9.974	1.085	Mar 2020	-		-		-		-	-	-	5.263
Advisory and Assistance Services	Various	Various : Various	22.711	6.753	Dec 2019	-		-		-		-	-	-	15.258



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650006 / <i>Next Generation Launch System Investment</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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>Rocket Propulsion System (RPS) Development</b>																												
Aerojet Rocketdyne OTA																												
<b>Launch Service Agreement (LSA)</b>																												
Blue Origin OTA																												
Northrop Grumman OTA																												
United Launch Services OTA																												

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650006 / <i>Next Generation Launch System Investment</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Rocket Propulsion System (RPS) Development</i></b>				
Aerojet Rocketdyne OTA	1	2020	4	2020
<b><i>Launch Service Agreement (LSA)</i></b>				
Blue Origin OTA	1	2020	4	2020
Northrop Grumman OTA	1	2020	4	2020
United Launch Services OTA	1	2020	4	2020