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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					PE 1206853F I National Security Space Launch Program (SPACE) - EMD							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	865.879	381.877	443.035	432.009	0.000	432.009	561.163	287.258	221.656	87.200	0.000	3,280.077
650006: Next Generation Launch System Investment	865.879	381.877	443.035	432.009	0.000	432.009	561.163	287.258	221.656	87.200	0.000	3,280.077
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 176												
Note - Prior year funding shown in Cost Table are FY 2014 - FY 2017 and was executed in Program Element (PE) 0604853F. - Per FY 2019 National Defense Authorization Act, the Evolved Expendable Launch Vehicle (EELV) program will be renamed the National Security Space Launch (NSSL) program, effective 1 March 2019.												
A. Mission Description and Budget Item Justification The National Security Space Launch (NSSL) program is a space launch system 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, includes, 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 two or more domestic commercial providers. The Air 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 providers. The end goal is two or more domestic, commercial launch providers that meet all NSS launch requirement needs. In addition, the Air Force is continuing a technical maturation program to address the highest risks for rocket propulsion system (RPS) development. Development of the required RPSs will continue under the LSA public-private partnerships. Space acquisition must respond with speed and agility to emerging adversary threats. Space and 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, 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 1206392F and 1206398F.												

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As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.						
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		297.572	245.447	196.409	0.000	196.409
Current President's Budget		381.877	443.035	432.009	0.000	432.009
Total Adjustments		84.305	197.588	235.600	0.000	235.600
• Congressional General Reductions		-1.871	-2.412			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		100.000	200.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-13.824	0.000			
• Other Adjustments		0.000	0.000	235.600	0.000	235.600
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 650006: Next Generation Launch System Investment						
Congressional Add: Launch Service Agreement Congressional Add						
Congressional Add Subtotals for Project: 650006						
Congressional Add Totals for all Projects						
Change Summary Explanation						
Both the FY 2018 and FY 2019 Congressional Adds were overall program increases.						
FY 2020 program increased by \$235.6M to properly execute the Launch Service Agreements.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: Rocket Propulsion System Development				20.000	0.000	37.500

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Description: Continued to invest in a providers of 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. Continued to execute a single RPS OTA agreement utilizing a public-private partnership. FY 2019 Plans: N/A FY 2020 Plans: Continuing to execute public-private partnership for an industry upper stage engine common to multiple launch service providers, ensuring a domestic, cost-effective solution. FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increase compared to FY 2019 by \$37.500M. Justification for this increase is described in the plans above.				
Title: Launch Service Agreement 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. Award Other Transaction Authority (OTA) agreements to develop various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY 2014. FY 2019 Plans: Continue investments with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercial launch providers that also meet NSS requirements. Includes Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. Continue program office support and other related support activities that may include, but are not limited to studies, technical analysis, prototyping, etc. FY 2020 Plans: Continue investments with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercial launch providers that also meet NSS requirements. Includes Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. 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, prototyping, etc. LSA profile is based on the anticipated 4QTR 2019 award of Phase 2 that will result in the LSA efforts continuing with two service providers.		261.877	243.035	394.509

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2018	FY 2019	FY 2020
Until the Phase 2 award the LSA funding cannot be broken out by provider due to the competitive nature of this acquisition strategy.												
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increased compared to FY 2019 by \$151.474M. Justification for this increase is described in the plans above.												
Accomplishments/Planned Programs Subtotals										281.877	243.035	432.009
										FY 2018	FY 2019	
Congressional Add: Launch Service Agreement Congressional Add										100.000	200.000	
FY 2018 Accomplishments: Invested with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercial launch providers that also meet NSS requirements.												
FY 2019 Plans: Invest with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercial launch providers that also meet NSS requirements.												
Congressional Adds Subtotals										100.000	200.000	
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
• SPAF 01 Line Item MSEELV: Evolved Expendable Launch Veh (Space)	487.918	954.555	1,237.635	-	1,237.635	734.165	1,101.442	1,259.445	1,483.922	11,280.649	18,539.731	
• SPAF 01 Line Item MSEELC: Evolved Expendable Launch Capability	904.948	659.981	0.000	-	0.000	0.000	0.000	0.000	-	0.000	1,564.929	
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.												

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F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206853F / National Security Space Launch Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Aerojet Rocketdyne OTA	C/Various	Aerojet Rocketdyne : Canoga Park, CA	277.001	20.000	Jun 2018	-		37.500	Nov 2019	-		37.500	5.136	339.637	-
United Launch Service RPS OTA	C/Various	United Launch Service : Centennial, CO	128.630	-		-		-		-		-	0.000	128.630	-
United Launch Service LSA OTA	C/Various	United Launch Service : Centennial, CO	0.000	109.635	Oct 2018	149.970	Dec 2018	-		-		-	0.000	259.605	-
Orbital ATK OTA	C/Various	Orbital ATK : Magna, UT	168.714	-		-		-		-		-	0.000	168.714	-
Northrop Grumman OTA	C/Various	Northrop Grumman : Chandler, AZ	0.000	109.635	Oct 2018	157.938	Dec 2018	-		-		-	0.000	267.573	-
Space X OTA	C/Various	Space X : Hawthorne, CA	97.844	-		-		-		-		-	0.000	97.844	-
Blue Origin OTA	C/Various	Blue Origin : Kent, WA	0.000	109.634	Oct 2018	86.532	Dec 2018	-		-		-	0.000	196.166	-
Broad Agency Announcement Technical Maturation Studies	C/Various	Various : Various	37.390	-		-		-		-		-	0.000	37.390	-
NASA Advance Booster Engine Demonstration Risk Reduction (ABEDRR)	SS/ Various	Various : Various	40.374	-		-		-		-		-	0.000	40.374	-
Georgia Tech Combustion Stability Technical Maturation UARC	SS/ Various	Various : Various	7.948	-		-		-		-		-	0.000	7.948	-
NASA Combustion Stability Technical Maturation Study	SS/ Various	Various : Various	6.800	-		-		-		-		-	0.000	6.800	-
AFRL Combustion Stability Technical Maturation Study	SS/ Various	Various : Various	3.179	-		-		-		-		-	0.000	3.179	-

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Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 1206853F / National Security Space Launch Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Hydrocarbon Boost Technical Maturation Demonstration	SS/ Various	Various : Various	37.154	-		-		-		-		-	0.000	37.154	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	20.911	7.962	Nov 2017	17.912	Nov 2018	17.732	Nov 2019	-		17.732	24.763	89.280	-
Launch Enterprise System Engineering and Integration	C/FP	Various : Various	5.573	1.842	Mar 2018	12.544	Mar 2019	12.040	Mar 2020	-		12.040	8.660	40.659	-
Launch Service Agreement (Including the Rocket Propulsion System)	C/TBD	TBD : TBD	0.000	-		-		352.784	Jan 2020	-		352.784	1,079.010	1,431.794	-
Subtotal			831.518	358.708		424.896		420.056		-		420.056	1,117.569	3,152.747	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	1.428	1.518	Oct 2017	1.918	Oct 2018	1.960	Oct 2019	-		1.960	8.446	15.270	15.628
Subtotal			1.428	1.518		1.918		1.960		-		1.960	8.446	15.270	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	4.700	2.776	Oct 2017	2.498	Nov 2018	0.955	Nov 2019	-		0.955	4.053	14.982	5.263
Advisory and Assistance Services	Various	Various : Various	12.283	9.783	Dec 2017	5.468	Dec 2018	4.960	Dec 2019	-		4.960	13.664	46.158	15.258
Other Support	Various	Various : Various	15.950	9.092	Nov 2017	8.255	Nov 2018	4.078	Nov 2019	-		4.078	13.545	50.920	1.254
Subtotal			32.933	21.651		16.221		9.993		-		9.993	31.262	112.060	N/A

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			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			865.879	381.877		443.035		432.009		-		432.009	1,157.277	3,280.077	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force			Date: February 2019		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>			Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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 OTA																												
<i>Launch Service Agreement (LSA)</i>																												
Blue Origin OTA																												
Northrop Grumman OTA																												
United Launch Services OTA																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206853F / <i>National Security Space Launch Program (SPACE) - EMD</i>	Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Rocket Propulsion System (RPS) Development</i>				
Aerojet Rocketdyne OTA	1	2018	4	2020
<i>Launch Service Agreement (LSA)</i>				
Blue Origin OTA	1	2019	4	2024
Northrop Grumman OTA	1	2019	4	2024
United Launch Services OTA	1	2019	4	2024