RCS: DD-A&T(Q&A)823-176

National Security Space Launch (NSSL)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name
National Security Space Launch (NSSL)

DoD Component
Air Force

This is a United States Space Force program.

In the Pre-EMD phase, RDT&E funding was also received from Defense Advanced Research Projects Agency (Defense-Wide PE 0603226E) and the National Reconnaissance Office.

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 10, 2013

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 10, 2013

Mission and Description

The mission of the National Security Space Launch (NSSL) program is to acquire launch services to provide critical space support required to satisfy DoD warfighter, national security, and other Government spacelift missions while fostering interagency and commercial cooperation. This mission includes the execution of flight worthiness certification processes and booster-to-satellite mission integration to maintain assured access to space and achieve 100% mission success.

The NSSL system includes launch vehicles, launch capability, a standard payload interface, support systems, mission integration (includes mission unique requirements), flight instrumentation and range interfaces, special studies (alternative upper and lower stage rocket propulsion sub-systems, mission feasibility analysis, secondary payloads, dual integration, special flight instrumentation, loads analysis, etc.), post-flight data evaluation and analysis, mission assurance, infrastructure, critical component engineering, Government Mission Director support, system/process and reliability improvements, training, and other technical support. The system also includes launch site operations activities, activities in support of assured access, systems integration and tests, and other related support activities. Additionally the program is working to develop two or more domestic, commercially viable, space launch providers that meet all National Security Space launch requirements.

In accordance with section 2273 of Title 10, U.S. Code and 2013 U.S. Space Transportation Policy the DoD is responsible for maintaining assured access to space. NSSL is the foundation for the access for intermediate and larger class payloads for the foreseeable future. In accordance with policy, NSSL maintains at least two families of space launch vehicles capable of reliably launching national security payloads.

Executive Summary

Program Highlights Since Last Report

NSSL continues to maintain 100% mission success with 78 consecutive National Security Space (NSS) launches. Since the 2018 SAR (containing data as of March 1, 2019) the NSSL program office accomplished three successful NSS launches, one on an Atlas V launch vehicle and two on Delta IV launch vehicles: Advanced Extremely High Frequency (AEHF)-5 on August 8, 2019, Wideband Global SATCOM (WGS)-10 on March 15, 2019, and Global Positioning System (GPS) III-1 on August 22, 2019, respectively.

NSSL is focused on four main priorities: Mission success; innovative mission assurance; transitioning to new launch vehicles; and assured access for current and future space architectures. Incorporating innovation and agility into the mission assurance processes will ensure continued mission success. The Space Force continues investing in industry to support the development of new launch vehicles for NSS payloads, assuring access to space into the next decade.

As part of this effort, NSSL has made significant progress in certifying SpaceX's Falcon Heavy launch vehicle, completing numerous Engineering Review Boards in preparation for first NSSL launch in 2020. The non-NSSL Space Test Program (STP)-2 successfully launched on June 25, 2019; this Falcon Heavy launch was the third NSSL certification flight for Falcon Heavy, providing valuable data on refurbishment and reflight of launch vehicle hardware. This mission was the first DoD launch on a Falcon Heavy, the first time previously flown Falcon Heavy side boosters were reused, and the first Falcon Heavy to deliver satellites to three different orbits.

The NSSL program office has successfully implemented multi-manifesting capability into the program with the launch of AEHF-5. Integrated multi-manifested missions maximize the use of the launch vehicle's performance to rapidly meet NSS requirements and warfighter needs. In response to an emergent Air Force Space Command requirement, the NSSL program office integrated a cubesat payload on the AEHF-5 mission that launched on August 8, 2019. Future NSSL missions identified as opportunities for multi-manifesting integration are AEHF-6, Space-Based Infrared System (SBIRS)-5 and SBIRS-6. Additionally, Air Force and National Aeronautics and Space Administration (NASA) have signed an Inter-Agency Agreement and identified NASA's Landsat-9 mission as an opportunity to integrate DoD payloads on a NASA-procured launch service.

The NSSL program office released the final Request for Proposal (RFP) for the Phase 2 Launch Service Procurement (LSP) on May 3, 2019. This RFP allows the Air Force to competitively award service contracts to launch providers for NSS missions to occur in approximately FY 2022-2027. Phase 2 proposals were received on August 12, 2019. On August 12, 2019, Blue Origin filed a pre-award protest with the General Accountability Office (GAO) challenging the terms of the RFP. Source selection activities continued in parallel during the disposition of the protest. The GAO released their findings on November 18, 2019 validating the Air Force strategy. They sustained only one of the four allegations made by Blue Origin, representing only minor changes to the RFP. The decision solidifies the foundation in which the Phase 2 LSP competition will provide cost-efficient launch services, to respond quickly to emerging threats, increase agility and flexibility with multi-mission rideshares, and leverage the latest in commercial innovations. NSSL expects that implementation of the GAO recommendation will cause little to no delay for contract award in 3rd quarter FY 2020.

The three Launch Service Agreement (LSA) Other Transaction Authority (OTA) agreements, awarded in 2018, are public-private partnerships facilitating development of NSSL launch system prototypes. LSA OTA investments allow providers to leverage and mature launch systems prior to the award to two NSS launch service providers for launch service procurements in FY 2020. LSAs were awarded to Blue Origin for the New Glenn Launch System, Northrop Grumman Innovation Systems (NGIS) for the OmegA Launch System and United Launch Alliance (ULA) for the Vulcan Centaur Launch System. All three LSA providers continue to make progress since award. Blue Origin is in the midst of their Critical Design Review (CDR) campaign and achieved 100% power on the BE-4 main stage engine this year. NGIS completed its CDR campaign in December 2019 and conducted first static fire of the CASTOR 600 first stage solid rocket motor this year. Finally, ULA completed its CDR campaign in mid-2019, is currently conducting Vulcan Centaur booster hardware qualification testing, and has initiated first flight article hardware builds. The Space Force continues to support the LSA industry partnership and is actively engaged in technical progress and certification efforts in support of first flights in 2021.

The Air Force released a Request for Information (RFI) for the National Security Launch Architecture study on October 25, 2019. The study is a combined effort of the Space and Missile Systems Center's (SMC) Portfolio Architect and the Launch Enterprise program offices. The RFI requests information pertaining to innovative commercial launch, maneuver, and commodity transport capabilities for 2025 and beyond, and how companies may satisfy NSS operational requirements in contested space environments. SMC held successful Industry days in December 2019, including one-on-one discussions. SMC will host additional Industry Days during the study, which is planned to conclude in the 4th quarter FY 2021 to inform Phase 3 development initiatives beginning in FY 2022.

The Phase 1 contract for the production and launch of Atlas V and Delta IV launch vehicles ended on September 30, 2019, having launched 44 NSS missions with 100% success and preserving the four billion dollars in savings achieved at time of award. Three Atlas V and two Delta IV launch vehicles produced under the Phase 1 contract have yet to launch. The sole-source Atlas V Completion firm fixed-price contract was awarded to ULA on October 1, 2019 for the operations and materials necessary to launch the three remaining Phase 1 Atlas V missions. The sole-source Delta IV Heavy firm fixed-price contract for the production of three additional launch vehicles was awarded on October 24, 2018 and modified on September 27, 2019 to include the operations and materials necessary to launch the three new Delta IV Heavy missions and the two remaining Phase 1 Delta IV Heavy missions. Phase 1A competitively awarded fifteen missions to ULA and SpaceX. There are 14 remaining missions scheduled to launch between 2020 and 2023: six by the ULA Atlas V launch system and eight by the SpaceX Falcon launch system,

The Space Force, in coordination with the National Reconnaissance Office, is developing a total program SCP. The SCP will support a revised APB and address the current RDT&E Total Cost APB Breach, caused by receipt of Congressional RDT&E funds for Rocket Propulsion development in CY 2015 that drove the current estimate to exceed the APB Threshold. The program continues to effectively manage program risks associated with a dynamic launch manifest, Phase 2 strategy, technical issues of the current launch systems, Rocket Propulsion System technologies, and LSA launch systems prototype development.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
August 1994	President approved National Space Transportation Policy (NSTP) establishing the EELV program, a space launch system that satisfies the National Launch Forecast requirements to place National Security Space (NSS) space vehicles on orbit.
August 1995	Awarded four contracts to begin the development of evolved expendable launch systems with the intent to down-select to one launch provider.
December 1996	Awarded two Pre-EMD contracts, one each to The Boeing Company (previously McDonnell Douglass) (Boeing) and Lockheed Martin Corporation (Lockheed), in line with the strategy to down-select to one provider.
December 1996	MDA approved EELV Milestone (MS) I.
November 1997	Updated acquisition strategy to partner with industry to develop two families of launch vehicles instead of selecting one, based on the commercial launch industry's projections for a robust commercial launch market. The new strategy procured launch services, where the Government would not take ownership of any hardware or property.
June 1998	MDA approved MS II and EELV entered into EMD.
October 1998	Awarded Initial Launch Services (ILS) two Firm Fixed Price (FFP) competitive contracts for 28 missions and two Other Transaction Authority Agreements (OTAs): one each to Lockheed and Boeing. The OTAs provided Government capital investments to meet NSS unique requirements.
December 1999	The U.S suffered six space launch failures over ten months. A Broad Area Review was established to evaluate practices, procedures, and operations, and make recommendations to avoid further failures.
September 2000	ILS contracts and OTA agreements were restructured based on a review of NSS requirements. The demand for West Coast launch services was not sufficient to support two contractors and Lockheed was relieved of the requirement to build a West Coast launch facility. In consideration, the AF awarded Boeing all ILS West Coast launches and funded an Heavy-Lift vehicle (HLV) demonstration flight to increase mission success confidence.
December 2002	Lockheed's Atlas V and Boeing's Delta IV successfully launched their first missions (both commercial).
December 2002	Both contractors considered exiting the launch market due to the lack of a commercial launch market. To protect assured access to space with two families of launch vehicles, the Government planned to fund EELV fixed costs.
March 2003	Successfully accomplished the first Delta IV NSS launch, Defense Satellite Communications System (DSCS) IIIB-27 (A3) on March 11, 2003.
December 2003	Breached Critical Nunn-McCurdy cost thresholds. The primary cause was price increases from the collapse of the commercial launch market. The FY 2005 PB funded EELV to cover an expected 50% increase in prices, and the cost of continued assured access to space.
April 2004	MDA certified to Congress that EELV had met all requirements pursuant to the NM law.
December 2004	President signed National Security Policy Directive(NSPD)-40, National Space Transportation Policy (NSTP), in December 2004. Stating in part: "The Secretary of Defense shall maintain overall management responsibilities for the EELV program and shall fund the annual fixed costs for both launch services providers".
December 2004	Accomplished the successful launch of the Delta IV HLV demonstrating the capability to meet all NSS launch requirements.

March 2005	Revised EELV Acquisition Strategy to implement the 2004 NSPD-40 direction to "fund the annual fixed costs for both launch services providers" by implementing separate contracts for launch services and for annual infrastructure capability, known as EELV Launch Services (ELS) and EELV Launch Capability (ELC).
June 2005	MDA approved MS C and placed the program into its Production Phase.
October 2006	Federal Trade Commission granted United Launch Alliance (ULA) anti-trust clearance allowing Boeing and Lockheed to form ULA. The new company stood up on December 1, 2006.
December 2006	Air Force Space Command (AFSPC) Commander declared EELV IOC and FOC.
March 2007	Successfully accomplished the first Atlas V NSS launch, Space Test Programs (STP)-1 on March 9, 2007.
August 2007	MDA approved an APB reflecting the end of Production Phase, marking the completion of MS III (MS C), and moving EELV from an active MDAP to a Sustainment Program. In September 2007, EELV submitted a termination SAR ending EELV MDAP reporting.
October 2007	AFSPC extended the EELV program lifecycle from 2020 to 2030.
October 2011	New Entrant Certification Guide was approved, establishing that: "The Air Force strategic intent is to promote the viability of multiple domestic EELV-class launch providers as soon as feasible."
November 2011	Restructured the Acquisition Strategy to maintain mission success while incentivizing cost reductions through steady production rates, long-term commitments, and opportunities for competition.
April 2012	In the FY 2012 National Defense Authorization Act (NDAA), Congress required EELV to resume MDAP reporting. EELV resumed SAR reporting with updated APUC and PAUC, triggering a critical NM breach. The breach was caused by Satellite Vehicle programs' delivery delays or cancellation, decreased NSS launch service demand from 138 to 92 missions and the rising cost of launch vehicle propulsion systems largely due to the cancellation of the Space Shuttle program.
July 2012	MDA certified to Congress that EELV had met all requirements pursuant to the NM law.
February 2013	MDA approved a revised APB updating the Current and Original Baseline cost thresholds, extending the program from 2020 to 2030 and increasing the quantity of launch services by 60. MDA also approved the amended Acquisition Strategy Document (ASD) and the ADM reinstating MS C (MS III).
February 2013	Amended the ASD to include competitive launch service awards starting in FY 2015, reintroducing competition to EELV for the first time since 1998.
June 2013	Awarded one Firm Fixed Price/Cost Plus Incentive Fees contact for launch production services for 36 launch vehicle cores and launch capability implementing the 2011 ASD.
February 2015	Breached Research, Development, Test, and Evaluation APB total cost threshold. This was due to cumulative effect of additional EELV funds provided in three actions: 1) FY 2014 Omnibus to invest in key propulsion technologies for a technical maturation and risk reduction program to invest in key propulsion technologies; 2) FY 2015 NDAA and Appropriations Act initiated development of a Rocket Propulsion System; and 3) FY 2016 Resource Management Decision directing the Air Force to provide two, commercially-viable, domestically-sourced, space launch services.
May 2015	Announced that the Space Exploration Technologies (SpaceX) Falcon 9 Launch System was capable of meeting NSS launch requirements.
April 2016	Reintroduced competition and awarded the first FFP competitive contract in over a decade. This contract was the first with SpaceX and the Falcon 9 launch vehicle.
May 2016	AFSPC publishes CPD to replace 1998 ORD. Basis for next generation rocket requirements (Standard Interface Specifications (SIS) and Systems Performance Requirements Document

	(SPRD) were both updated and signed in June 2017) with guidance leaning forward to space warfighting capability in the 2020s.
June 2017	MDA approved the Launch Service Agreements (LSA) ASD with two key priorities: improving affordable NSS assured access to space and transitioning from the use of non-allied engines. The strategy implements the funding provided in FY 2016 and 2017 PBs to invest in one or more launch provider's emerging systems.
October 2018	MDA approved a new ASD to allow a full and open competition with an award to two providers for FY 2020 – 2025 procurements.
October 2018	Awarded three LSA OTAs for development of Launch System Prototypes.
December 2018	Successfully accomplished the first Falcon 9 EELV launch, Global Positions System (GPS) III-2 on December 23, 2018.
March 2019	The FY 2019 NDAA contained a provision to re-name the EELV program the National Security Space Launch (NSSL) program effective March 1, 2019.
August 2019	Accomplished 78 successful NSS launches since the inception of the NSSL program.

Threshold Breaches

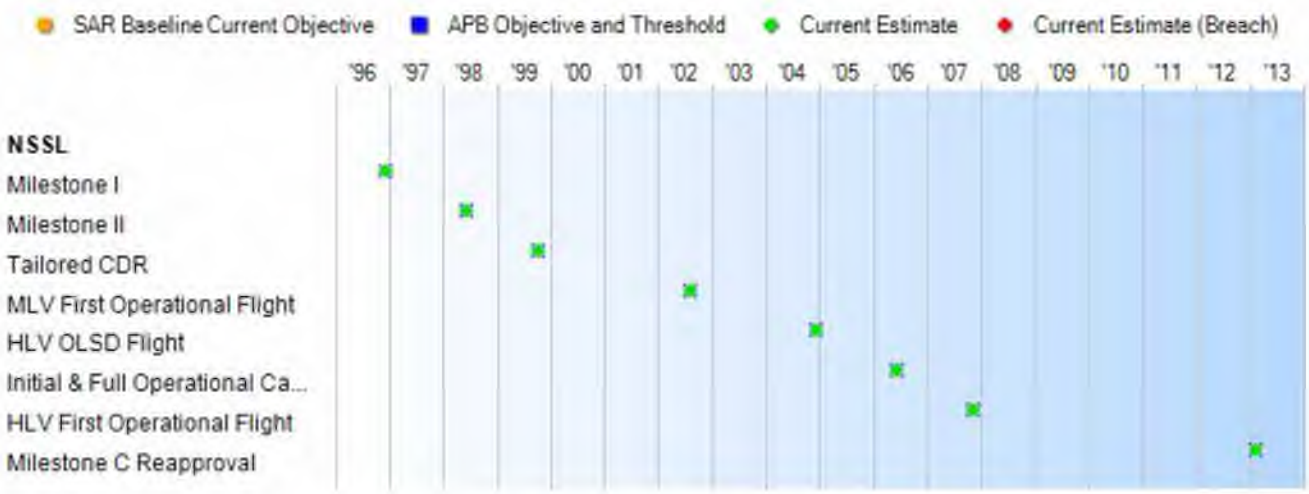
APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☑
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The RDT&E breach was previously reported in the December 2015 SAR. A Program Deviation Report (PDR) was submitted and the Space Force, in coordination with the National Reconnaissance Office, is developing a total program SCP. The SCP will support a revised APB and address the current RDT&E Total Cost breach.

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone I	Dec 1996	Dec 1996	Dec 1996	Dec 1996
Milestone II	Jun 1998	Jun 1998	Jun 1998	Jun 1998
Tailored CDR	Oct 1999	Oct 1999	Oct 1999	Oct 1999
MLV First Operational Flight	Aug 2002	Aug 2002	Aug 2002	Aug 2002
HLV OLSD Flight	Dec 2004	Dec 2004	Dec 2004	Dec 2004
Initial & Full Operational Capability	Jun 2006	Jun 2006	Jun 2006	Jun 2006
HLV First Operational Flight	Nov 2007	Nov 2007	Nov 2007	Nov 2007
Milestone C Reapproval	Feb 2013	Feb 2013	Feb 2013	Feb 2013

Change Explanations

None

Acronyms and Abbreviations

CDR - Critical Design Review
HLV - Heavy-Lift Vehicle
MLV - Medium-Lift Vehicle
OLSD - Operational Launch Service Demonstration

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Performance Mass to Orbit				
LEO: 100nm X 100nm 63.4 deg (lbs)				
19,550	19,550	17,000	17,000	17,000
POLAR 1: 450nm x 450nm, 98.2 deg (lbs)				
5,060-8,050 (15%)	5,060-8,050 (15%)	4,400-7,000	4,400-7,000	4,400-7,000
POLAR 2: 100nm x 100nm, 90 deg (lbs)				
43,050	43,050	41,000	41,000	41,000
SEMI-SYNC: 10,998nm x 100nm, 55.0 deg (lbs)				
2,875-5,152 (15%)	2,875-5,152 (15%)	2,500-4,725	2,500-4,725	2,500-4,725
GTO: 19,324nm x 90nm, 27 deg (lbs)				
7,015-9,775 (15%)	7,015-9,775 (15%)	6,100-8,500	6,100-8,500	6,100-8,500
MOLNIYA: 21,150nm x 650nm, 63.4 deg (lbs)				
8,050	8,050	7,000	7,000	7,000
GEO: 19,323nm x19,323nm, 0 deg (lbs)				
14,175	14,175	13,500	13,500	13,500
Vehicle Design Reliability (%)				
>98	>98	98	98	98
Standardization				
Launch Pads				
Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site
Payload interfaces				
One std payload interface	One std payload interface	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)

Requirements Reference

Operational Requirements Document (ORD) II dated September 15, 1998

Change Explanations

None

Notes

The NSSL program office accomplished 78 successful NSS launches (43 on Atlas V launch vehicles, 34 on Delta IV launch vehicles, and one on Falcon 9 launch vehicle).

Performance Characteristics do not represent any specific satellite mission. The Government verified Demonstrated Performance by review and analysis.

Air Force Space Command and the program office completed a Spacelift CPD on May 31, 2016. The requirements have been incorporated into two subsequent documents (SPRD and SIS), driving the design of new launch vehicles and capturing new space vehicle requirements for Phase 2 implementation. The Performance Requirements Reference will be updated in the revised APB.

Acronyms and Abbreviations

add'l - additional
configs - configurations
CPD - Capability Production Document
deg - degree
GEO - Geosynchronous Earth Orbit
GTO - Geosynchronous Transfer Orbit
lbs - pounds
LEO - Low Earth Orbit
MOLNIYA - A highly inclined, highly elliptical orbit first used by the Russian MOLNIYA satellite
NASA - National Aeronautics and Space Administration
nm - nautical mile
NSS - National Security Space
POLAR - Polar Orbit
rqmts - requirements
SEMI-SYNC - Semi-Sychronous Orbit
SIS - Standard Interface Specification
SPRD - System Performance Requirements Document
Std - Standard

Track to Budget

General Notes

In December 2019, the Office of Management and Budget directed the DoD to establish new Space Force RDT&E and procurement appropriations. Beginning in FY 2021, space-related RDT&E funding, formerly under 3600F (RDT&E, Air Force) is contained in 3620SF (RDT&E, Space Force) and space procurement funding formerly under 3021F (Space Procurement, Air Force) is contained in 3022SF (Procurement, Space Force).

RDT&E

Appn	BA	PE
Air Force	3600 04	0603853F

Project	Name	
650006	EELV Pre-EMD	(Sunk)
Notes:	FY 1995-1998	

Appn	BA	PE
Air Force	3600 05	0604853F

Project	Name	
650004	Evolved Expendable Launch Vehicle EMD	(Sunk)
650006	Next Generation Liquid Rocket Engine	(Sunk)

Appn	BA	PE
Air Force	3600 05	1206853F

Project	Name
650006	Next Generation Launch System Investment

Notes

The program also received funding from Defense Advanced Research Projects Agency (Defense-Wide PE 0603226E) and National Reconnaissance Office (Sunk).

Procurement

Appn	BA	PE
Air Force	3020 05	0305953F

Line Item	Name	
MSEELC	Evolved Expendable Launch Vehicle Capability	(Sunk)
MSEELV	Evolved Expendable Launch Vehicle	(Sunk)

Appn	BA	PE
Air Force	3021 01	0305953F

Line Item	Name	
MSEELC	Evolved Expendable Launch Capability (Space)	(Sunk)

Appn	BA	PE
Air Force	3021 01	1203953F

Line Item	Name

	MSEELC	Evolved Expendable Launch Capability (Space)	(Sunk)
Air Force	3021 01	0305953F	

Line Item	Name	
MSEELV	Evolved Expendable Launch Vehicle (Space)	(Sunk)

Air Force	3021 01	1203953F

Line Item	Name
MSEELV	National Security Space Launch (Space)

Notes

The program also receives funding from Navy for procurement of NSSL Launch Services for Mobile User Objective System (MUOS) spacecraft (APPN 1507, BA 02, PE 0303109N, Line Item 243300), as well as from the National Reconnaissance Office.

In December 2014, the Office of Management and Budget directed the DoD to establish a new space procurement appropriation. Beginning in FY 2016, Air Force major procurement funding formerly under 3020F (Missile Procurement, Air Force) BA 05 is contained in 3021F (Space Procurement, Air Force) BA 01, a three-year procurement account.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	2365.1	2365.1	2601.6	5235.3[1]	1962.1	1962.1	5237.2
Procurement	59078.3	59078.3	64986.1	50380.4	67367.3	67367.3	57777.3
Flyaway	--	--	--	50380.4	--	--	57777.3
Recurring	--	--	--	50380.4	--	--	57777.3
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	61443.4	61443.4	N/A	55615.7	69329.4	69329.4	63014.5

[1] *APB Breach*

Cost Notes

No cost estimate has been completed on this program in the previous year.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	1	1	1
Procurement	151	151	191
Total	152	152	192

Quantity Notes

The increase in quantity from 180 in the previous report to 192 is due to an increase in launch service requirements.

Cost and Funding

Funding Summary

Appropriation Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	3594.7	432.0	561.0	287.3	221.6	87.2	53.4	0.0	5237.2
Procurement	28850.7	1980.3	1964.3	2150.3	2292.4	2453.0	2764.1	15322.2	57777.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2021 Total	32445.4	2412.3	2525.3	2437.6	2514.0	2540.2	2817.5	15322.2	63014.5
PB 2020 Total	32832.1	2412.3	2482.4	2180.1	2486.9	2643.0	3760.1	12536.6	61333.5
Delta	-386.7	0.0	42.9	257.5	27.1	-102.8	-942.6	2785.6	1681.0

Quantity Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	1	0	0	0	0	0	0	0	0	1
Production	0	97	5	6	7	8	9	11	48	191
PB 2021 Total	1	97	5	6	7	8	9	11	48	192
PB 2020 Total	1	97	5	4	4	6	8	15	40	180
Delta	0	0	0	2	3	2	1	-4	8	12

Cost and Funding

Annual Funding By Appropriation

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	9.8
1995	--	--	--	--	--	--	30.0
1996	--	--	--	--	--	--	110.6
1997	--	--	--	--	--	--	62.9
1998	--	--	--	--	--	--	92.3
1999	--	--	--	--	--	--	242.0
2000	--	--	--	--	--	--	321.8
2001	--	--	--	--	--	--	388.0
2002	--	--	--	--	--	--	321.8
2003	--	--	--	--	--	--	55.8
2004	--	--	--	--	--	--	7.5
2005	--	--	--	--	--	--	21.0
2006	--	--	--	--	--	--	19.1
2007	--	--	--	--	--	--	29.9
2008	--	--	--	--	--	--	18.3
2009	--	--	--	--	--	--	33.3
2010	--	--	--	--	--	--	43.9
2011	--	--	--	--	--	--	53.8
2012	--	--	--	--	--	--	14.5
2013	--	--	--	--	--	--	29.9
2014	--	--	--	--	--	--	46.2
2015	--	--	--	--	--	--	225.6
2016	--	--	--	--	--	--	224.9
2017	--	--	--	--	--	--	381.4
2018	--	--	--	--	--	--	381.9
2019	--	--	--	--	--	--	428.5
2020	--	--	--	--	--	--	432.0
Subtotal	1	--	--	--	--	--	4026.7

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	13.2
1995	--	--	--	--	--	--	39.7
1996	--	--	--	--	--	--	143.6
1997	--	--	--	--	--	--	80.6
1998	--	--	--	--	--	--	117.5
1999	--	--	--	--	--	--	304.9
2000	--	--	--	--	--	--	399.4
2001	--	--	--	--	--	--	474.8
2002	--	--	--	--	--	--	389.7
2003	--	--	--	--	--	--	66.7
2004	--	--	--	--	--	--	8.7
2005	--	--	--	--	--	--	23.9
2006	--	--	--	--	--	--	21.1
2007	--	--	--	--	--	--	32.1
2008	--	--	--	--	--	--	19.3
2009	--	--	--	--	--	--	34.6
2010	--	--	--	--	--	--	45.1
2011	--	--	--	--	--	--	54.2
2012	--	--	--	--	--	--	14.4
2013	--	--	--	--	--	--	29.1
2014	--	--	--	--	--	--	44.4
2015	--	--	--	--	--	--	214.6
2016	--	--	--	--	--	--	210.8
2017	--	--	--	--	--	--	350.3
2018	--	--	--	--	--	--	343.7
2019	--	--	--	--	--	--	378.3
2020	--	--	--	--	--	--	373.7
Subtotal	1	--	--	--	--	--	4228.4

Quantity of one represents the Heavy-Lift Vehicle (HLV) Operational Launch Service Demonstration (OLSD), also referred to as the Heavy Demo, launched in December 2004.

Included in the previous years funds above are Defense Advanced Research Projects Agency (DARPA) and National Reconnaissance Office (NRO) provided funding. Previously stated in past SARs as Advanced Research Projects Agency (ARPA) and National User.

Annual Funding 3620 | RDT&E | Research, Development, Test, and Evaluation, Space Force, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	--	--	--	--	--	--	561.0
2022	--	--	--	--	--	--	287.3
2023	--	--	--	--	--	--	221.6
2024	--	--	--	--	--	--	87.2
2025	--	--	--	--	--	--	53.4
Subtotal	--	--	--	--	--	--	1210.5

Annual Funding 3620 | RDT&E | Research, Development, Test, and Evaluation, Space Force, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	--	--	--	--	--	--	475.8
2022	--	--	--	--	--	--	238.9
2023	--	--	--	--	--	--	180.7
2024	--	--	--	--	--	--	69.7
2025	--	--	--	--	--	--	41.8
Subtotal	--	--	--	--	--	--	1006.9

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	1	68.1	--	--	68.1	--	68.1
2001	5	518.4	--	--	518.4	--	518.4
2002	--	--	6.1	--	6.1	--	6.1
2003	1	200.2	--	--	200.2	--	200.2
2004	7	1094.2	--	--	1094.2	--	1094.2
2005	4	670.6	--	--	670.6	--	670.6
2006	1	721.7	--	--	721.7	--	721.7
2007	3	1013.1	--	--	1013.1	--	1013.1
2008	5	1586.0	--	--	1586.0	--	1586.0
2009	6	2213.2	--	--	2213.2	--	2213.2
2010	5	1558.5	--	--	1558.5	--	1558.5
2011	8	2097.9	--	--	2097.9	--	2097.9
2012	9	3070.5	--	--	3070.5	--	3070.5
2013	7	2254.8	--	--	2254.8	--	2254.8
2014	6	1877.3	--	--	1877.3	--	1877.3
2015	7	2061.6	--	--	2061.6	--	2061.6
Subtotal	75	21006.1	6.1	--	21012.2	--	21012.2

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	1	83.6	--	--	83.6	--	83.6
2001	5	629.7	--	--	629.7	--	629.7
2002	--	--	7.3	--	7.3	--	7.3
2003	1	236.4	--	--	236.4	--	236.4
2004	7	1264.6	--	--	1264.6	--	1264.6
2005	4	753.6	--	--	753.6	--	753.6
2006	1	788.2	--	--	788.2	--	788.2
2007	3	1079.4	--	--	1079.4	--	1079.4
2008	5	1659.5	--	--	1659.5	--	1659.5
2009	6	2283.3	--	--	2283.3	--	2283.3
2010	5	1585.4	--	--	1585.4	--	1585.4
2011	8	2091.0	--	--	2091.0	--	2091.0
2012	9	3010.1	--	--	3010.1	--	3010.1
2013	7	2160.4	--	--	2160.4	--	2160.4
2014	6	1772.7	--	--	1772.7	--	1772.7
2015	7	1924.2	--	--	1924.2	--	1924.2
Subtotal	75	21322.1	7.3	--	21329.4	--	21329.4

Cost Quantity Information 3020 | Procurement | Missile Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2000	1	83.6
2001	5	629.7
2002	--	--
2003	1	236.4
2004	7	1265.1
2005	4	753.6
2006	1	1789.1
2007	3	2125.4
2008	5	1636.2
2009	6	2097.5
2010	5	1510.1
2011	8	2134.0
2012	9	2863.4
2013	7	2115.4
2014	6	1017.1
2015	7	1065.5
Subtotal	75	21322.1

Annual Funding 3021 | Procurement | Space Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	6	1994.1	--	--	1994.1	--	1994.1
2017	5	2025.8	--	--	2025.8	--	2025.8
2018	3	1735.9	--	--	1735.9	--	1735.9
2019	8	2082.7	--	--	2082.7	--	2082.7
2020	5	1980.3	--	--	1980.3	--	1980.3
Subtotal	27	9818.8	--	--	9818.8	--	9818.8

Annual Funding 3021 | Procurement | Space Procurement, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	6	1829.3	--	--	1829.3	--	1829.3
2017	5	1820.4	--	--	1820.4	--	1820.4
2018	3	1523.7	--	--	1523.7	--	1523.7
2019	8	1792.6	--	--	1792.6	--	1792.6
2020	5	1670.4	--	--	1670.4	--	1670.4
Subtotal	27	8636.4	--	--	8636.4	--	8636.4

All NSSL launch services are fully funded in the year ordered, two or three years prior to launch, depending on vehicle configuration, and are fixed price. Launch support and capability costs are funded on an annual basis.

The Space Force missions, purchased with Missile (3020) and Space (3021) Procurement funds, comprise 120 of the 191 total launches. The remaining missions in the table above include funding and quantities from other sources to include the National Reconnaissance Office and the Department of the Navy. Navy launch service procurement funding and quantities are included in the NSSL SAR; however, the satellite program baselines also include these funds. There is one additional Air Force mission, the Heavy-Lift Vehicle Demonstration mission, purchased with RDT&E (3600) funds.

Cost Quantity Information 3021 | Procurement | Space Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2016	6	2562.8
2017	5	2283.7
2018	3	788.7
2019	8	1326.7
2020	5	1674.5
Subtotal	27	8636.4

Annual Funding 3022 | Procurement | Procurement, Space Force, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	6	1964.3	--	--	1964.3	--	1964.3
2022	7	2150.3	--	--	2150.3	--	2150.3
2023	8	2292.4	--	--	2292.4	--	2292.4
2024	9	2453.0	--	--	2453.0	--	2453.0
2025	11	2764.1	--	--	2764.1	--	2764.1
2026	17	4656.0	--	--	4656.0	--	4656.0
2027	16	4601.0	--	--	4601.0	--	4601.0
2028	15	4588.7	--	--	4588.7	--	4588.7
2029	--	728.7	--	--	728.7	--	728.7
2030	--	747.8	--	--	747.8	--	747.8
Subtotal	89	26946.3	--	--	26946.3	--	26946.3

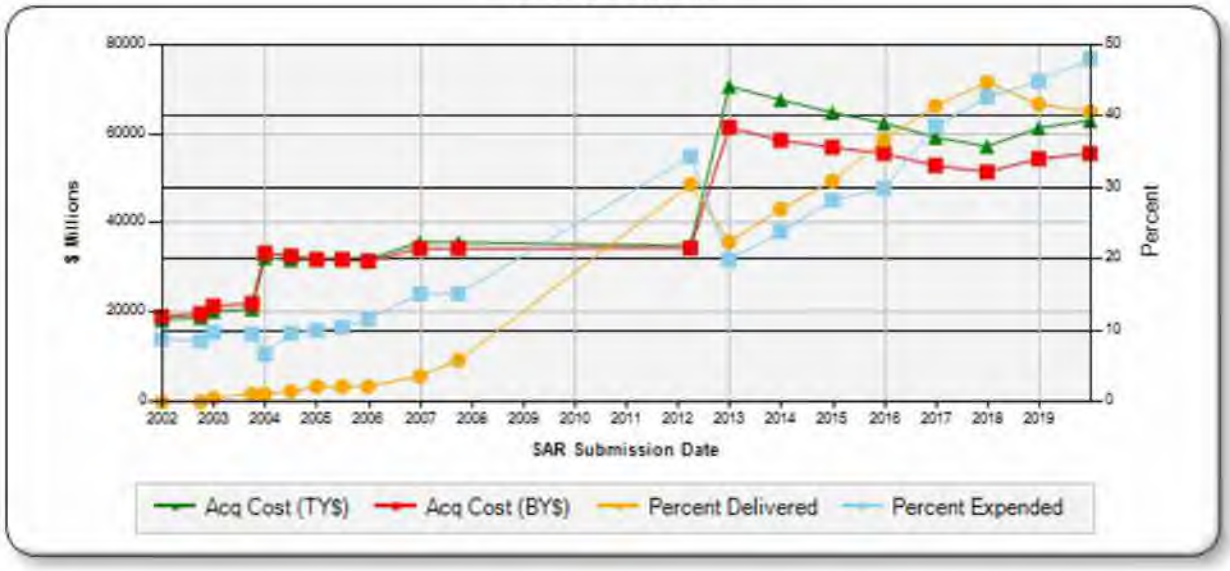
Annual Funding 3022 | Procurement | Procurement, Space Force, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2021	6	1624.4	--	--	1624.4	--	1624.4
2022	7	1743.4	--	--	1743.4	--	1743.4
2023	8	1822.1	--	--	1822.1	--	1822.1
2024	9	1911.6	--	--	1911.6	--	1911.6
2025	11	2111.8	--	--	2111.8	--	2111.8
2026	17	3487.4	--	--	3487.4	--	3487.4
2027	16	3378.6	--	--	3378.6	--	3378.6
2028	15	3303.5	--	--	3303.5	--	3303.5
2029	--	514.3	--	--	514.3	--	514.3
2030	--	517.5	--	--	517.5	--	517.5
Subtotal	89	20414.6	--	--	20414.6	--	20414.6

Cost Quantity Information 3022 | Procurement | Procurement, Space Force, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2021	6	1623.5
2022	7	1742.4
2023	8	1821.1
2024	9	1910.4
2025	11	2110.5
2026	17	3485.4
2027	16	3376.7
2028	15	4344.6
2029	--	--
2030	--	--
Subtotal	89	20414.6

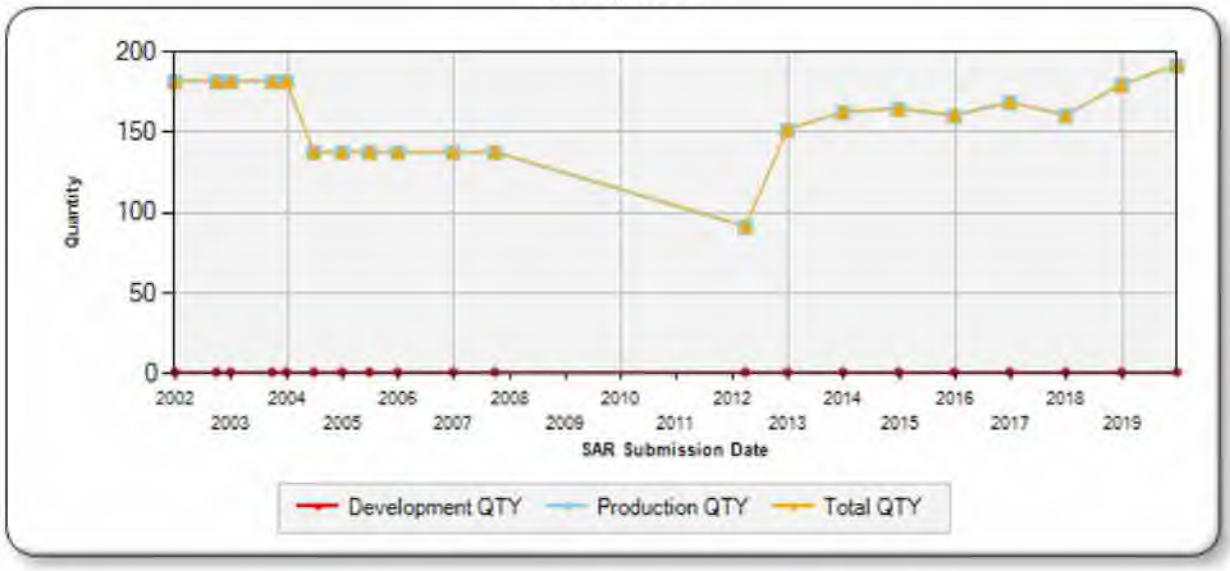
Charts

NSSL first began SAR reporting in December 1997

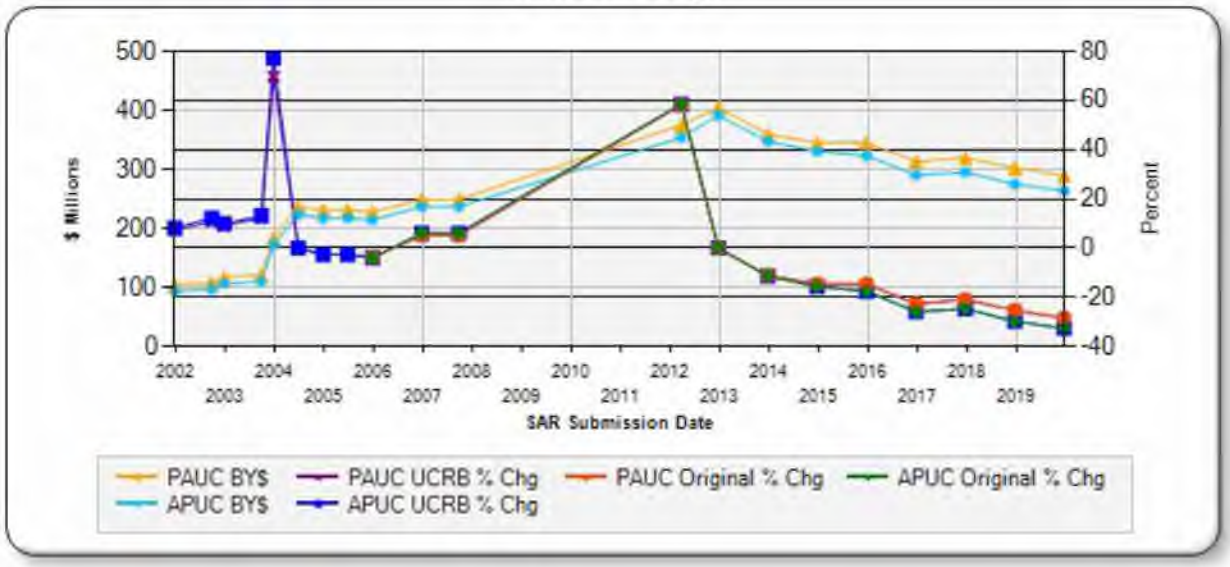
Program Acquisition Cost - NSSL
Base Year 2012 $M



Quantity - NSSL



Unit Cost - NSSL
Base Year 2012 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Current Estimate (December 2019)	
1.	There are no schedule or technical risks identified at this time.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (February 2013)	
1.	The Current Baseline Estimate is the Independent Cost Estimate developed by the OSD Cost Analysis and Program Evaluation team in January 2013. The following are two risks identified in their estimate: creation of a more competitive launch provider environment in a declining launch need environment could increase costs to the program; and that the program launch manifest and procurement requirements remain relatively stable.
Original Baseline Estimate (October 1998)	
1.	There are no risks identified at this time.
Revised Original Estimate (February 2013)	
1.	The Revised Original Estimate is the Current Baseline Estimate.
Current Procurement Cost (December 2019)	
1.	The Current Procurement Cost is based on the CAPE ICE from 2013 adjusted for four changes in Acquisition Strategy.
2.	Impacts of variability in National Security Space launch requirements.
3.	Uncertainty of Phase 2 launch providers: new launch systems currently under development.

Low Rate Initial Production

There is no LRIP for this program.

Foreign Military Sales

None

Nuclear Costs

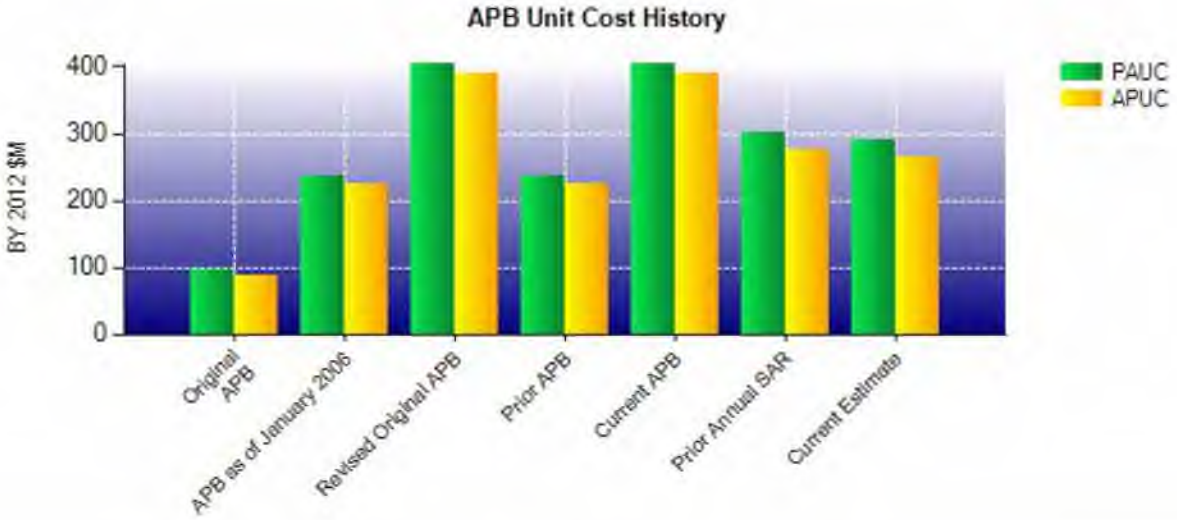
None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Current UCR Baseline (Feb 2013 APB)	BY 2012 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	61443.4	55615.7	
Quantity	152	192	
Unit Cost	404.233	289.665	-28.34
Average Procurement Unit Cost			
Cost	59078.3	50380.4	
Quantity	151	191	
Unit Cost	391.247	263.772	-32.58

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Revised Original UCR Baseline (Feb 2013 APB)	BY 2012 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	61443.4	55615.7	
Quantity	152	192	
Unit Cost	404.233	289.665	-28.34
Average Procurement Unit Cost			
Cost	59078.3	50380.4	
Quantity	151	191	
Unit Cost	391.247	263.772	-32.58

Average unit cost figures reported above are a combination of each of three different launch vehicle configurations and annual launch capability requirements. The average unit cost will vary due to shifts in payload weight and volume, mission-unique services, number of missions per year and other factors.



APB Unit Cost History					
Item	Date	BY 2012 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 1998	97.147	87.193	95.844	87.827
APB as of January 2006	Jul 2004	236.886	223.191	230.358	219.571
Revised Original APB	Feb 2013	404.233	391.247	456.114	446.141
Prior APB	Aug 2007	236.886	223.191	230.358	219.571
Current APB	Feb 2013	404.233	391.247	456.114	446.141
Prior Annual SAR	Dec 2018	302.302	274.911	340.742	313.603
Current Estimate	Dec 2019	289.665	263.772	328.201	302.499

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
95.844	-6.787	55.829	-1.019	1.510	310.650	0.087	0.000	360.270	456.114

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
456.114	2.404	-59.938	2.175	0.000	-72.554	0.000	0.000	-127.913	328.201

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
87.827	-6.789	54.306	-1.026	0.000	311.823	0.000	0.000	358.314	446.141

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
446.141	2.397	-58.163	2.186	0.000	-90.062	0.000	0.000	-143.642	302.499

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	Dec 1996	Dec 1996	Dec 1996	Dec 1996
Milestone II	Jun 1998	N/A	Jun 1998	Jun 1998
Milestone III	Jul 2003	N/A	N/A	N/A
IOC	TBD	TBD	Jun 2006	Jun 2006
Total Cost (TY $M)	2000.0	17347.8	69329.4	63014.5
Total Quantity	N/A	181	152	192
PAUC	N/A	95.844	456.114	328.201

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1962.1	67367.3	--	69329.4
Previous Changes				
Economic	+5.2	+479.2	--	+484.4
Quantity	--	+4455.9	--	+4455.9
Schedule	--	+417.6	--	+417.6
Engineering	--	--	--	--
Estimating	+3231.3	-16585.1	--	-13353.8
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+3236.5	-11232.4	--	-7995.9
Current Changes				
Economic	-1.5	-21.3	--	-22.8
Quantity	--	+2280.4	--	+2280.4
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+40.1	-616.7	--	-576.6
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+38.6	+1642.4	--	+1681.0
Total Changes	+3275.1	-9590.0	--	-6314.9
Current Estimate	5237.2	57777.3	--	63014.5

Summary BY 2012 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	2365.1	59078.3	--	61443.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	+3193.6	--	+3193.6
Schedule	--	-9.2	--	-9.2
Engineering	--	--	--	--
Estimating	+2840.1	-13053.6	--	-10213.5
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+2840.1	-9869.2	--	-7029.1
Current Changes				
Economic	--	--	--	--
Quantity	--	+1729.8	--	+1729.8
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+30.1	-558.5	--	-528.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+30.1	+1171.3	--	+1201.4
Total Changes	+2870.2	-8697.9	--	-5827.7
Current Estimate	5235.3	50380.4	--	55615.7

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-1.5
Congressional General reduction in FY 2019 for Small Business Innovation Research. (Estimating)	-12.3	-13.9
Adjustment for current and prior escalation. (Estimating)	+0.8	+0.9
Funds transferred within program from Space Procurement, Air Force appropriation to newly added Procurement, Space Force. (Estimating)	-965.3	-1157.4
Funds transferred within program from Space Procurement, Air Force appropriation to newly added Procurement, Space Force. (Estimating)	+965.1	+1157.1
Increased funding to invest in new launch systems providers to support National Security Space mission requirements. (Estimating)	+41.8	+53.4
RDT&E Subtotal	+30.1	+38.6

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-21.3
Quantity Variance due to the cancelation of the Satellite Vehicle requirement for Space Test Program (STP)-4: funds were reprogramed to other administration priorities. (Quantity)	-182.4	-211.9
Quantity Variance due to an increase of 12 launch services, from 179 to 191, based on Satellite Vehicle requirements (Quantity)	+1912.6	+2492.3
Funds transferred within program from Space Procurement, Air Force appropriation to newly added Procurement, Space Force. (Quantity)	-18940.4	-24931.7
Funds transferred within program from Space Procurement, Air Force appropriation to newly added Procurement, Space Force. (Quantity)	+18940.0	+24931.7
Congressional rescission in FY 2019 for Phase 1A competitive savings in FY 2019 (Estimating)	-126.9	-145.8
Adjustment for current and prior escalation. (Estimating)	+6.0	+6.8
Revised estimate due to changes in satellite vehicle requirements necessitating assignment of missions to different configurations. (Estimating)	+526.5	+724.7
Revised estimate due to a change in estimating methodology. (Estimating)	-964.1	-1202.4
Procurement Subtotal	+1171.3	+1642.4

Contracts

General Notes

In accordance with SAR guidance, this report includes contract inputs for the six largest contracts based on Target Price. NSSL has a total of 17 active programmatic contracts:

Contract Number	Type	Contract name	Company
FA8811-19-C-0002	FFP	Delta IV Heavy LVPS	ULA
FA8811-19-9-0003	OTA	Launch Services Agreement	ULA
FA8811-19-9-0002	OTA	Launch Services Agreement	Orbital Sciences Corp.
FA8811-19-9-0001	OTA	Launch Services Agreement	Blue Origin LLC
FA8811-19-C-0005	FFP	SILENTBARKER, SBIRS-5/6	ULA
FA8811-18-C-0002	FFP	AFSPC-8/12 Launch Services	ULA
FA8811-16-9-0003	OTA	Rocket Propulsion Systems	Aerojet Rocketdyne
FA8811-19-C-0004	FFP	AFSPC-44, NROL-85/87 Launch Services	ULA
FA8811-18-C-0001	FFP	GPS III Launch Services	SpaceX
FA8811-17-C-0008	FFP	STP-3 Launch Services	ULA
FA8811-16-9-0002	OTA	Rocket Propulsion Systems	ATK Launch Systems, Inc.
FA8811-18-C-0003	FFP	AFSPC-52 Launch Services	SpaceX
FA8811-16-9-0004	OTA	Rocket Propulsion Systems	ULA
FA8811-20-C-0001	FFP	Atlas V Completion	ULA
FA8811-16-9-0001	OTA	Rocket Propulsion Systems	SpaceX
FA8811-17-C-0005	FFP	GPS III Launch Services	SpaceX
FA8811-13-C-0003	FFP	Phase I Buy (FFP/CPFF/CFIP)	ULA

Acronyms:
LVPS – Launch Vehicle Production Services
SpaceX - Space Exploration Technologies
ULA - United Launch Alliance

Contract Identification

Appropriation: Procurement
Contract Name: Delta IV Heavy Launch Vehicle Production Services
Contractor: United Launch Alliance
Contractor Location: Centennial, CO 80112
Contract Number: FA8811-19-C-0002
Contract Type: Firm Fixed Price (FFP)
Award Date: October 24, 2018
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
467.0	N/A	3	1643.0	N/A	3	1643.0	1643.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the modification for launch operations support.

Of the 3 launches, none have been launched. Contract completion is estimated to end in CY 2024.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Contract Identification

Appropriation: RDT&E
Contract Name: United Launch Alliance Launch Services Agreement
Contractor: United Launch Alliance
Contractor Location: Centennial, CO 80112
Contract Number: FA8811-19-9-0003
Contract Type: Other Transaction Agreement (OTA)
Award Date: October 10, 2018
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
967.0	N/A	N/A	967.0	N/A	N/A	967.0	967.0

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (OTA) contract.

Notes

This OTA is for shared cost investment in the development of Launch Systems Prototypes with at least one-third statutory cost-sharing by contractor.

Contract Identification

Appropriation: RDT&E
Contract Name: Orbital Sciences Launch Services Agreement
Contractor: Orbital Sciences Corp.
Contractor Location: Chandler, AZ 85248
Contract Number: FA8811-19-9-0002
Contract Type: Other Transaction Agreement (OTA)
Award Date: October 10, 2018
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
791.6	N/A	N/A	791.6	N/A	N/A	791.6	791.6

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (OTA) contract.

Notes

This OTA is for shared cost investment in the development of Launch Systems Prototypes with at least one-third statutory cost-sharing by contractor.

Contract Identification

Appropriation: RDT&E
Contract Name: Blue Orgin LLC Launch Services Agreement
Contractor: Blue Orgin LLC
Contractor Location: Kent, WA 98032
Contract Number: FA8811-19-9-0001
Contract Type: Other Transaction Agreement (OTA)
Award Date: October 10, 2018
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
500.0	N/A	N/A	500.0	N/A	N/A	500.0	500.0

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (OTA) contract.

Notes

This OTA is for shared cost investment in the development of Launch Systems Prototypes with at least one-third statutory cost-sharing by contractor.

Contract Identification

Appropriation: Procurement
Contract Name: SILENTBARKER, SBIRS-5, & SBIRS-6 Launch Services
Contractor: United Launch Alliance
Contractor Location: Centennial, CO 80112
Contract Number: FA8811-19-C-0005
Contract Type: Firm Fixed Price (FFP)
Award Date: February 19, 2019
Definitization Date:

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
441.8	N/A	3	441.8	N/A	3	441.8	441.8

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

Of the three procurements, none have been launched. Contract completion is estimated to be in CY 2022.

Contract Identification

Appropriation: Procurement
Contract Name: FY12 EELV Launch Services (ELS5)
Contractor: United Launch Alliance
Contractor Location: Centennial, CO 80112
Contract Number: FA8811-13-C-0002
Contract Type: Firm Fixed Price (FFP)
Award Date: May 02, 2011
Definitization Date: January 10, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1787.0	N/A	10	552.1	N/A	4	552.1	552.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the April 2013 contract de-scope, moving 6 missions to the FY 2011 EELV Launch Services contract FA8811-11-C-0001 and contract modifications.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

All four missions have been launched.

This contract is more than 90% complete; therefore, this is the final report for this contract.

Contract Identification

Appropriation: Procurement
Contract Name: FY13+ Phase 1 Buy
Contractor: United Launch Alliance
Contractor Location: Centennial, CO 80112
Contract Number: FA8811-13-C-0003
Contract Type: Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF), Cost Plus Incentive Fee (CPIF)
Award Date: June 26, 2013
Definitization Date: December 18, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
3033.2	N/A	26	9837.3	N/A	35	9837.3	9837.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a change in reporting to reflect the FFP and CPFF/CPIF efforts combined. This results in the new values shown here (as compared to the previous SAR) for both the Initial Contract Price and the Current. Previously contract FA881-C-13-0003 was reported as two separate efforts to enable Cost and Schedule Variance reporting for the CPIF/CPFF efforts.

The increase in total combined Current Target Price from $9,774.0 to $9,837.3 is due to contract modifications.

The Prices and Quantity reported here are the combination of the FFP and CPFF/CPIF efforts.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP/CPFF/CPIF) contract.

Notes

Of the 35 launch procurements, 26 have been launched. The nine remaining launch procurements have been completed, with launches planned in CY 2020.

The period of performance for the CFPP/CPIF efforts ended on September 30, 2019: Cost and Schedule Variance reporting is no longer applicable. The FFP portion of the contract was reported separately as contract number FA881-C-13-0003/1.

This contract is more than 90% complete; therefore, this is the final report for this contract.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	1	1	1	100.00%
Production	77	77	191	40.31%
Total Program Quantity Delivered	78	78	192	40.63%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	63014.5	Years Appropriated	27
Expended to Date	30254.8	Percent Years Appropriated	72.97%
Percent Expended	48.01%	Appropriated to Date	34857.7
Total Funding Years	37	Percent Appropriated	55.32%

The above data is current as of February 10, 2020.

Operating and Support Cost

Cost Estimate Details

Date of Estimate: December 31, 2015
Source of Estimate: Headquarter Air Force Space Command
Quantity to Sustain: 0
Unit of Measure: Years
Service Life per Unit: 31.00 Years
Fiscal Years in Service: FY 2000 - FY 2030

Sustainment Strategy

NSSL is a launch service procurement. The Government never takes possession of hardware, therefore has no sustainment strategy.

Antecedent Information

The Antecedent System is Titan IV. The NSSL program provides launch services for DoD and National Reconnaissance Office satellite vehicles. No single antecedent system covered NSSL's combined launch capabilities. Previous launch services were provided by Titan II, Delta II, Atlas II, and Titan IV launch vehicle systems. Of these, Titan IV was selected as the program that was the closest representation of an antecedent system. Cost details were provided by the Air Force Total Ownership Cost database.

Annual O&S Costs BY2012 $M		
Cost Element	**NSSL Average Annual Cost Per Years**	**Titan IV (Antecedent) Average Annual Cost Per Launch Vehicle**
Unit-Level Manpower	--	11.561
Unit Operations	--	67.656
Maintenance	--	12.638
Sustaining Support	--	0.003
Continuing System Improvements	--	--
Indirect Support	--	0.343
Other	40.500	--
Total	40.500	92.201

Other O&S funds support critical infrastructure at the Eastern and Western Ranges.

Item	Total O&S Cost $M			
	NSSL			Titan IV (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	1256.8	1382.5	1255.5	N/A
Then Year	1388.3	N/A	1381.1	0.0

Equation to Translate Annual Cost to Total Cost

NSSL unitized costs are calculated by using the Total O&S Cost divided by the Service Life: BY 2012 $1,255.5M divided by 31 years to equal the annual cost of $40.5M.

O&S Cost Variance		
Category	**BY 2012 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	1255.5	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	1255.5	

Disposal Estimate Details

Date of Estimate: December 31, 2015

Source of Estimate: Headquarters Air Force Space Command

Disposal/Demilitarization Total Cost (BY 2012 $M):

NSSL is a launch service and therefore has no disposal costs.