Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-198

F-35 Lightning II Joint Strike Fighter (JSF) Program (F-35)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Sensitivity Originator

Organization: F-35 Lightning II Program
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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)

Program Information

Program Name

F-35 Lightning II Joint Strike Fighter (JSF) Program (F-35)

DoD Component

DoD

Joint Participants

United States Navy; United States Air Force; United States Marine Corps; United Kingdom; Italy; The Netherlands; Turkey; Canada; Australia; Denmark; Norway

The F-35 Program is a joint DoD program for which Service Acquisition Executive Authority alternates between the Department of the Navy (DoN) and the Department of the Air Force (DAF), and currently resides with the DAF.

Responsible Office

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References

F-35 Aircraft

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 26, 2012

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 18, 2014

F-35 Engine

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 26, 2012

Approved APB

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Mission and Description

The F-35 Lightning II Program will develop and field an affordable, highly common family of next-generation strike aircraft for the U.S. Navy, Air Force, Marine Corps, and allies. The three variants are the F-35A; F-35B; and the F-35C. The F-35A will be a stealthy multi-role aircraft, primarily air-to-ground, for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18A/C/D for the Marine Corps. The F-35C will provide the U.S. Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F. The planned DoD F-35 Fleet will replace the joint services' legacy fleets. The transition from multiple type/model/series to a common platform will result in a smaller total force over time and operational and overall cost efficiencies.

Executive Summary

The DoD's 2018 National Defense Strategy (NDS) outlines three central pillars in order to succeed in the emerging global security environment – Build a More Lethal Joint Force; Strengthen Alliances and Attract New Partnerships; and Reform Business Practices for Greater Performance and Affordability. Our Joint and Coalition Forces will need the capabilities and capacities of technologically superior weapon systems to out-think, out-maneuver and out-innovate the rogue regimes, violent extreme organizations and other adversarial global actors that challenge our military advantage and national security interests. The F-35 Lightning II program aligns to and directly enables the implementation of the NDS. The PB 2019 submission summarized in this SAR provides the fact-of-life changes, program wholeness and critical near term investments necessary to ensure the F-35 weapon system enables our Joint Forces' lethality, deepens our desired partnerships and aggressively drives cost out of all elements of the program to achieve affordable outcomes.

The F-35 Lightning II remains the DoD's largest cooperative acquisition program bringing together three U.S. Services - U.S. Air Force (USAF), U.S. Marine Corps (USMC), U.S. Navy (USN)) and eight Partner nations (United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway) to develop, deliver and sustain this now-demonstrated fifth-generation strike fighter capability. In addition to these foundational partners, the program currently has three FMS customers (Israel, Korea, and Japan) with several new FMS customers showing strong interests. The F-35 is a major cornerstone in all participants' current and future air dominance strategies; however, the F-35 is more than just an aircraft. It is a complex, interdependent air system that includes the intelligence, maintenance, support, training and mission planning systems required to enable the aircraft to become an effective warfighting capability. The F-35 program continues to move at a full sprint across three interdependent lines of effort - development, production, and sustainment - to develop, deliver and sustain the complete F-35 air system. With an estimated $1.5 trillion (TY$) life cycle cost, the shared accountability and responsibility between the U.S. Government and F-35 industry partners to perform to plan cannot be emphasized enough as the investments by the U.S. Services, Partner nations and FMS customers constitutes a substantial portion of each of their defense budgets.

This shared accountability drives a requirement for seamless collaboration and proactive engagement between the F-35 industry partners and the F-35 Joint Program Office (JPO) for expeditious deliveries, quality products, long term growth, and affordability. The JPO needs positive engagement with all industry partners to slash timelines for technical resolutions, program plan generation, contract actions and awards, production deliveries, and sustainment solutions. The JPO will continue to work with its industry partners and incentivize them to embrace innovative and bold acquisition approaches to rapidly deliver advanced capabilities, aggressively drive down the production costs and restructure the sustainment and ownership framework to ensure our warfighters can afford to own and operate the F-35 air system well into the future.

The F-35 program had measured successes throughout 2017. The program completed Block 3 weapons testing and delivered the final planned version of Block 3F aircraft software. The program completed LRIP 9 deliveries, delivered the first F-35A AX-5 aircraft from the Japanese International Final Assembly and Check Out (FACO) facility, delivered the first F-35B BL-01 aircraft from the Italian International FACO facility and conducted the first Turkish aircraft mate. The USMC successfully executed a change of operational station to their new homeport in Japan. The USAF successfully conducted several land based deployments and Air Forces exercises. The program established initial depot repair capability in U.S. Military Service Depots, and selected four countries for Outside the Continental United States (OCONUS) depot repair. The program also stood up two Continental United States (CONUS) and three OCONUS repair sites, providing over 3,000 pieces of support equipment and enabling execution of the global pooling concept. The program reached multiple training milestones as well, surpassing 500 multinational pilots and 5,000 multinational maintainers trained since 2011. Finally, the program conducted the First Aircraft Arrival (FAA) for Norway and Italy, and declared IOC for Israel.

The program's key focus areas for 2018 include: delivering full Block 3F air system capabilities; transitioning to the Continuous Capability Development and Delivery (C2D2) framework to enable the rapid, affordable delivery of Block 4 capability; hiring the required government skill sets to support our Agile execution approach; improving aircraft quality while driving cost out of the production line and supply chain; holding F-35 industry partners accountable to the performance and

quality outcomes we require; meeting our warfighter's expectations for Air Vehicle Availability (AVA), Mission Capable (MC) & Full Mission Capable (FMC) rates; aggressively reducing ownership cost ($/tail/year, $/flying hour); and reaching FAA for Australia and IOC for the USN and United Kingdom. The following paragraphs provide further details on the accomplishments and look-ahead efforts across our three lines of effort - development, production, sustainment – supported by our F-35 PB2019 submission.

Development

After the 2011 re-baseline, the development effort associated with the delivery of full Block 3F Capabilities has stabilized, and we are currently on track to deliver the full Block 3F capabilities by February, May, and June 2018 for the F-35A, F-35B, and F-35C, respectively. This capability delivery will support entry into formal Initial Operational Test and Evaluation (IOT&E) in mid-2018. To ensure the F-35 remains a relevant, capable warfighting platform, the Block 4 capability requirements were defined, refined and approved by the U.S. Services and Partner nations. This process culminated in their formal endorsement in an F-35 Decision Memorandum 90 signed March 2016, and a JROC Memorandum signed October 2017, validating the U.S. Services CDD. With the requirements defined and validated, the F-35 JPO determined that legacy linear development and delivery approaches could not deliver the required capability on the required timeline at available funding levels, and as such, initiated a new capability delivery methodology known as the C2D2 framework. This effort reflects a shift to a more agile process that enables the F-35 enterprise to incrementally develop, integrate, test, and make available for delivery the full Block 4 capability set on an operationally-relevant timeline. The full and proactive cooperation of the F-35 prime contractor is a critical enabler to this transition. The JPO will continue to work collaboratively with the prime contractor to encourage the dramatic shift in systems engineering and business behaviors and practices required to enable an effective transition to the C2D2 framework. While we are still establishing the C2D2 framework, systems engineering work has begun on a subset of the F-35 Block 4 capabilities using contract vehicles initiated under our legacy approach. System Functional Review for these capabilities was held in late 2017; these elements are focused on maintaining viability against evolving threats, upgrading and improving System Development and Demonstration (SDD) delivered Block 3F capabilities, reducing life cycle costs and improving operational suitability. The near-term focus of the Block 4 upgrades includes improved engagement of moving targets, maritime mission enhancements, future air and surface threats, and ability to execute discreet Intelligence, Surveillance and Reconnaissance (ISR) missions.

Since the C2D2 framework leverages the tenets of agile development and is relatively new within the F-35 program, it will require the development and use of new or alternative cost estimating methodologies and approaches. Until then, F-35 JPO developmental cost estimates will continue to be based on traditional DoD cost estimating methodologies and approaches to software and capability development efforts coupled with historical, or actual, experiences. Generated with legacy cost estimating methods, the program's FY 2018 and FY 2019 estimates still possess a high degree of fidelity with regard to required near-term Block 4 activities; however, estimates for FY 2020 and beyond should be considered to be more conservative. As the C2D2 approach and our new cost estimating methodologies mature over time, the JPO will continuously evaluate the program cost impact and update the cost estimate(s) so that subsequent updates will include a full, high fidelity cost estimate(s) across the FYDP and beyond.

Since the program plans to adopt an agile project management and technical practices framework to support the C2D2 methodology, program documentation will be developed as appropriate to satisfy all regulatory and statutory requirements. The new agile C2D2 methodology will, to the greatest extent possible, exchange those regulatory and statutory requirements with comprehensive design, implementation, and test artifacts throughout the development process in order to maintain a high level of systems engineering rigor. As this methodology evolves, the program will communicate 'real time' with the Congressional Defense Committee staffs through quarterly PEO and DAE engagements, and provide the annual Follow-on Modernization report required by Section 224(b) of the National Defense Authorization Act for FY 2017 (Public Law 114-328). RDT&E costs in this SAR exclude C2D2 and follow-on modernization effort funding contained in the following projects: F-35B/C Sustainment/Capability enhancements; F-35A Deployability and Suitability enhancements; and F-35A Dual Capable Aircraft enhancements. C2D2 and other modernization costs are not included in this SAR, but will be included once the program and its Acquisition Strategy and baseline are reviewed and approved by the Milestone Decision Authority.

Production

The program delivered 66 aircraft and achieved its planned delivery goal – though not necessarily all its intermediate monthly contractual goals – for 2017. In 2018, the goal is to deliver a total of 91 aircraft. Of those 91 aircraft, 85 aircraft will

be delivered from the Fort Worth FACO, 2 aircraft from the Italian FACO and 4 aircraft from the Japanese FACO. The JPO continues to experience slow negotiation behaviors from the prime contractor that unnecessarily extends the time line to contract award. As production ramps up, the JPO has concerns with the prime contractor's ability to negotiate in a timely manner to meet required delivery schedules with the required quality and performance. The JPO is incentivizing the prime contractor's behavior through appropriate contracts and other methods to improve production systems, to reduce span times, improve quality and reduce costs.

The JPO is keenly focused on aggressively reducing the cost to produce the F-35, and is leading a multi-agency Cost Deep Dive with support from experts across OSD, the U.S. Services, and industry. The two main objectives of this effort are to establish a common cost data repository and identify proposed production line efficiency initiatives. Through on-site production line assessments of the F-35 prime contractor and its top 100 suppliers, this Deep Dive will build a knowledge base that allows the DoD and the prime contractor to fully understand what drives the cost of producing a F-35. This common cost data repository will be refreshed annually and used to negotiate a fair and reasonable price for our U.S. Services and Partner nations. Additionally, as each production line assessment is conducted across the supplier base, the team will highlight production line efficiencies that, when implemented, will further reduce the F-35 production costs to be competitive with 4th generation alternatives. It is imperative that the F-35 industry base embrace these recommendations to achieve the associated cost benefits.

The current U.S. Services' F-35 total procurement quantity reflected in the SAR remains 2456 with the following breakout: USAF – 1763 F-35A, USMC – 353 F-35B and 67 F-35C, and USN 273 F-35C. This procurement quantity and breakout is the same as the PB 2018 submission and last year's SAR. The current production profile for the U.S. Services assumes annual lot-by-lot procurements leveraging Economic Order Quantity (EOQ) investments between FY 2018-2020. From FY 2021 to the end of the program, the USAF production profile assumes one 3-year multi-year procurement (FY 2021-FY 2023) followed by successive 5-year multi-year procurements beginning in FY2024, with the required EOQ investments and associated savings. The Department of Navy (DoN) did not include EOQ funding in the PB 2019 submission for a multi-year in FY 2021-2023 for either the F-35B or F-35C. The DoN plans to reassess that decision in the coming FY 2020 budget cycle. Therefore, the DoN PB 2019 production profile assumes annual procurements from FY 2021-2023, followed by successive 5-year multi-year procurements from FY 2024 to the end of the program with necessary EOQ investments and associated savings.

Sustainment

The O&S section of the SAR reflects the 2015 CAPE ICE update. The F-35 JPO has updated the program office portion of the narrative in the O&S section with its current estimates. Although not reflected in the O&S section, the updated Fiscal Years in Service are FY 2011 - FY 2077.

The F-35 Enterprise is in full stride standing up the Global Support Solution (GSS) to provide cost effective, safe and timely Maintenance, Repair, Overhaul and Upgrade (MRO&U) within a three-region framework (Europe, Pacific, and North America) for airframe, engine, component, warehousing, and distribution. As of January 16 2018, the F-35 Enterprise consisted of 268 fielded aircraft; during the next five years, another 670+ aircraft are expected to be delivered and fielded. The global sustainability posture (including both readiness and cost) relies on a common pool of spares and support equipment, common pilot and maintainer training, and common engineering support. Unique country-specific requirements and capabilities are provided via Afloat and Deployable Spares Packages (ASP/DSP) requirements at U.S. Service, Partner nations, and FMS-unique cost.

At current estimates, the projected F-35 sustainment outlays are too costly. Given planned fleet growth, future U.S. Service O&S budgets will be strained. The prime contractor must embrace much-needed supply chain management affordability initiatives, optimize priorities across the supply chain for spare and new production parts, and enable the exchange of necessary data rights to implement the required stand-up of planned government organic software capabilities. The program is establishing and validating affordability goals and required actionable initiatives to realize them; focusing on cost reduction efforts, capacity tradeoffs, reallocation of Industry/Government workshare and alignment within U.S. Services' Budgets. Achieving these goals will require updates to product support and sustainment strategies, including the Life-cycle Support Plan (LCSP) and supporting Business Case Analyses (BCA) to address fielding and sustainment performance improvements. The Program is using Performance Based Logistics (PBL) principles, manifested in GSS and related enterprise capabilities, to maximize warfighter performance while working within participant resource constraints. In 2016,

the F-35 Lightning II program began including PBL elements in Lockheed Martin sustainment contracts, in order to drive contractor behavior, through performance-based incentives on Fleet operational performance metrics. The Program executed a multiple-year contract with Pratt & Whitney for FY 2017-FY 2019, which implements PBL principles with appropriate incentives. To move to full PBL for the F-35 Air System by FY 2025, the program will continue this initial PBL implementation phase with Lockheed Martin, using incentives for selected performance metrics in a single-year FY 2020 and a multiple-year contract for FY 2021-FY 2025.

The objective will be to meet warfighter operational requirements at CONUS and forward deployed locations by delivering: affordable sustainment for the F-35 within the U.S. Services budgets; stabilized Autonomic Logistics Information System (ALIS) and Information Technology (IT) architecture that is protected from cybersecurity threats; increased transparency; and expanded warfighter roles to enable frequent and detailed discussions to align with U.S. Service priorities and link budgetary decisions to F-35 sustainment strategies.

Looking ahead to 2018

2018 is on track to be another productive and challenging year. It is a year of transition, as the program shifts its development line of effort from legacy SDD processes to a new capability delivery paradigm with C2D2. In the production line of effort, the program is driving affordability into the F-35 prime contractor's production line and global supply chain via the Cost Deep Dive initiative even as that production line climbs its aggressive ramp to almost 100 aircraft per year. In sustainment, the program is driving cost-effective performance through affordability initiatives while it builds and reinforces a global supply chain and distribution network to hit U.S. Service and Partner nation cost and performance targets. Simultaneously, the F-35 JPO is targeting a needed shift in contractor performance through a renewed emphasis on cost and performance-focused incentives that encourages behavior changes to support our affordability and performance mandates. This shared accountability between U.S. Government and Industry partners is vital for F-35 long term success. Our warfighters will continue to accept F-35 air systems establishing new bed down sites, both land based and maritime, as they continue to mature their warfighting concept of operations to be prepared to fight the fight when called upon. The F-35 demands an extraordinary amount of our nation's resources in order to operate and the JPO is working daily to ensure the F-35 remains an affordable, lethal and effective war-winning platform in support of our NDS.

Threshold Breaches

F-35 Aircraft

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

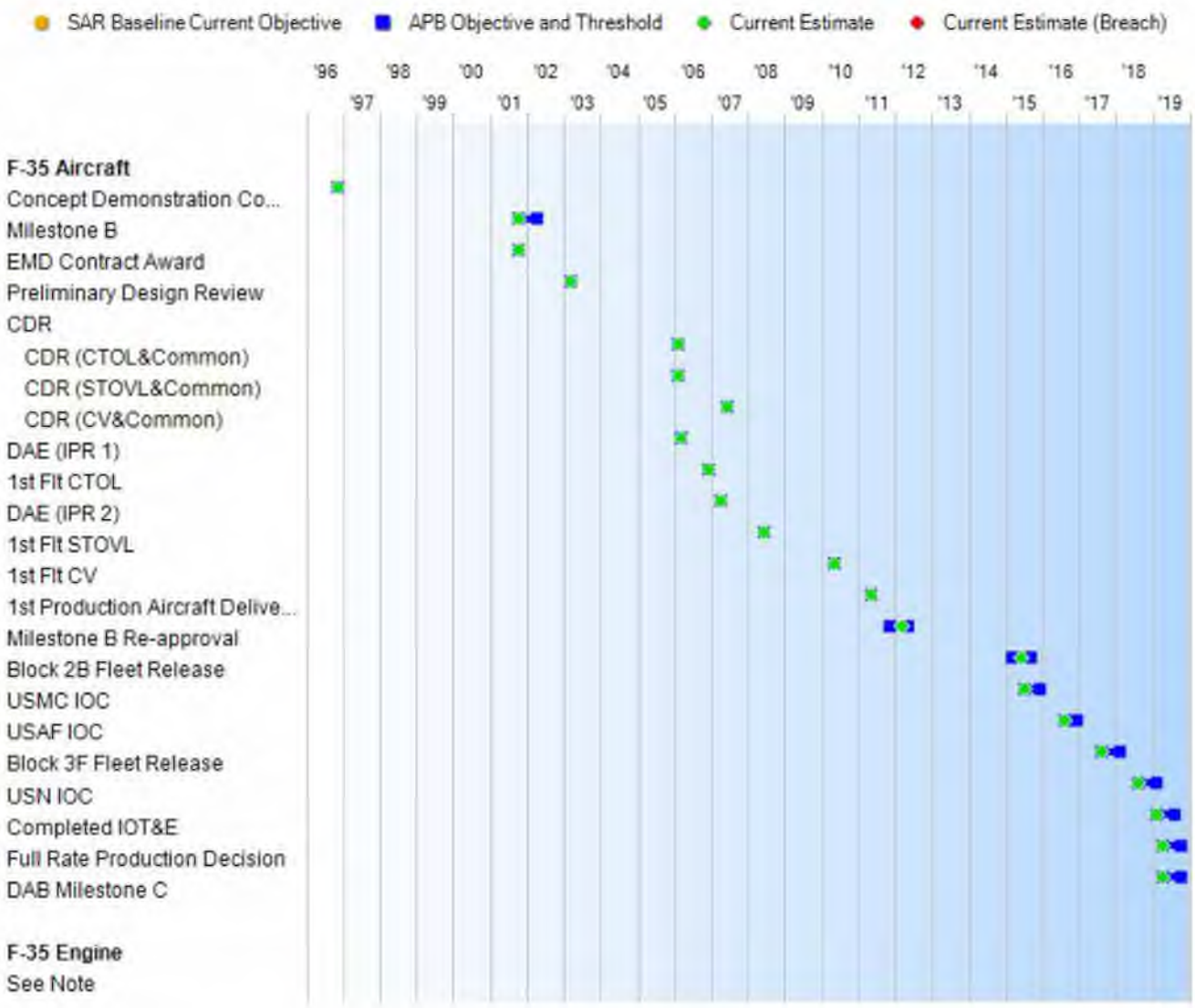
Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

F-35 Engine

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

Schedule


SAR Baseline Current Objective
APB Objective and Threshold
Current Estimate
Current Estimate (Breach)
'96
'97
'98
'99
'00
'01
'02
'03
'04
'05
'06
'07
'08
'09
'10
'11
'12
'13
'14
'15
'16
'17
'18
'19
F-35 Aircraft
Concept Demonstration Co...
Milestone B
EMD Contract Award
Preliminary Design Review
CDR
CDR (CTOL&Common)
CDR (STOVL&Common)
CDR (CV&Common)
DAE (IPR 1)
1st Flt CTOL
DAE (IPR 2)
1st Flt STOVL
1st Flt CV
1st Production Aircraft Delive...
Milestone B Re-approval
Block 2B Fleet Release
USMC IOC
USAF IOC
Block 3F Fleet Release
USN IOC
Completed IOT&E
Full Rate Production Decision
DAB Milestone C
F-35 Engine
See Note

F-35 Aircraft

Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Concept Demonstration Contract Award	Nov 1996	Nov 1996	Nov 1996	Nov 1996
Milestone B	Oct 2001	Oct 2001	Apr 2002	Oct 2001
EMD Contract Award	Oct 2001	Oct 2001	Oct 2001	Oct 2001
Preliminary Design Review	Apr 2003	Mar 2003	Mar 2003	Mar 2003
CDR				
CDR (CTOL&Common)	Feb 2006	Feb 2006	Feb 2006	Feb 2006
CDR (STOVL&Common)	Feb 2006	Feb 2006	Feb 2006	Feb 2006
CDR (CV&Common)	Jun 2007	Jun 2007	Jun 2007	Jun 2007
DAE (IPR 1)	Mar 2006	Mar 2006	Mar 2006	Mar 2006
1st Flt CTOL	Dec 2006	Dec 2006	Dec 2006	Dec 2006
DAE (IPR 2)	Apr 2007	Apr 2007	Apr 2007	Apr 2007
1st Flt STOVL	Jun 2008	Jun 2008	Jun 2008	Jun 2008
1st Flt CV	Jun 2010	May 2010	May 2010	May 2010
1st Production Aircraft Delivered	May 2011	May 2011	May 2011	May 2011
Milestone B Re-approval	Mar 2012	Nov 2011	May 2012	Mar 2012
Block 2B Fleet Release	Mar 2015	Mar 2015	Sep 2015	Jun 2015
USMC IOC	TBD	Jul 2015	Dec 2015	Jul 2015
USAF IOC	TBD	Aug 2016	Dec 2016	Aug 2016
Block 3F Fleet Release	Aug 2017	Aug 2017	Feb 2018	Aug 2017
USN IOC	TBD	Aug 2018	Feb 2019	Aug 2018
Completed IOT&E	Feb 2019	Feb 2019	Aug 2019	Feb 2019
Full Rate Production Decision	Apr 2019	Apr 2019	Oct 2019	Apr 2019
DAB Milestone C	Apr 2019	Apr 2019	Oct 2019	Apr 2019

Change Explanations

None

Acronyms and Abbreviations

CDR - Critical Design Review
CTOL - Conventional Takeoff and Landing
CV - Aircraft Carrier Suitable Variant
Flt - Flight
IOT&E - Initial Operational Test and Evaluation
IPR - Interim Progress Review
STOVL - Short Takeoff and Vertical Landing
USAF - United States Air Force
USMC - United States Marine Corps
USN - United States Navy

F-35 Engine

Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
See Note	N/A	N/A	N/A	N/A

Change Explanations

None

Notes

Schedule milestones for the F-35 Engine subprogram are captured as part of the system-level schedule milestones reflected in the F-35 Aircraft subprogram.

Performance

F-35 Aircraft

Performance Characteristics					
SAR Baseline Development Estimate	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**	
STOVL Mission Performance - STO Distance Flat Deck					
With four 1000# JDAMs and two internal AIM-120s, full expendables, execute a 600 foot (450 UK STOVL) STO from LHA, LHD, and aircraft carriers (sea level, tropical day, 10 kts operational WOD) and with a combat radius of 550 nm (STOVL profile). Also must perform STOVL vertical landing with two 1000# JDAMs and two internal AIM-120s, full expendables, and fuel to fly the STOVL Recovery profile.	With four 1000# JDAMs and two internal AIM-120s, full expendables, execute a 600 foot (450 UK STOVL) STO from LHA, LHD, and aircraft carriers (sea level, tropical day, 10 kts operational WOD) and with a combat radius of 550 nm (STOVL profile). Also must perform STOVL vertical landing with two 1000# JDAMs and two internal AIM-120s, full expendables, and fuel to fly the STOVL Recovery profile.	With two 1000# JDAMs and two internal AIM-120s, full expendables, execute a 600 foot (450 UK STOVL) STO from LHA, LHD, and aircraft carriers (sea level, tropical day, 10 kts operational WOD) and with a combat radius of 450 nm (STOVL profile). Also must perform STOVL vertical landing with two 1000# JDAMs and two internal AIM-120s, full expendables, and fuel to fly the STOVL Recovery profile.	Execute 471 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	Execute 471 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	(Ch-1)
Combat Radius NM -CTOL Variant					
690	690	590	669	669	
Combat Radius NM -STOVL Variant					
550	550	450	505	505	
Combat Radius NM -CV Variant					
730	730	600	670	670	(Ch-2)
Mission Reliability - CTOL Variant					
98%	98%	93%	93%	93%	
Mission Reliability - CV Variant					
98%	98%	95%	95%	95%	
Mission Reliability - STOVL Variant					
98%	98%	95%	97%	97%	
Logistics Footprint - CTOL Variant					
Less than or equal to 6 C-17 equivalents	Less than or equal to 6 C-17 equivalents	Less than or equal to 8 C-17 equivalent loads	Less than or equal to 8 C-17 equivalents	Less than or equal to 8 C-17	

				equivalents
Logistics Footprint - CV Variant				
Less than or equal to 34,000 cu ft., 183 ST	Less than or equal to 34,000 cu ft., 183 ST	Less than or equal to 46,000 cu ft., 243 ST	Less than or equal to 44,900 cu ft., 222 ST	Less than or equal to 44,900 cu ft., 222 ST
Logistics Footprint - STOVL Variant				
Less than or equal to 4 C -17 equivalents	Less than or equal to 4 C-17 equivalents	Less than or equal to 8 C-17 equivalent loads	Less than or equal to 8 C-17 equivalents	Less than or equal to 8 C-17 equivalents
Logistics Footprint - STOVL Variant L-Class				
Less than or equal to 15,000 cu ft, 104 ST	Less than or equal to 15,000 cu ft, 104 ST	Less than or equal to 21,000 cu ft, 136 ST	Less than or equal to 18,400 cu ft, 105 ST	Less than or equal to 18,400 cu ft, 105 ST
Sortie Generation Rates - CTOL Variant				
4.0/3.0/2.0 2.5 ASD	4.0/3.0/2.0 2.5 ASD	3.0/2.0/1.0 2.5 ASD	3.4/3.0/2.0 2.5 ASD	3.4/3.0/2.0 2.5 ASD
Sortie Generation Rates - CV Variant				
4.0/3.0/1.0 1.8 ASD	4.0/3.0/1.0 1.8 ASD	3.0/2.0/1.0 1.8 ASD	3.9/3.0/1.0 1.8 ASD	3.9/3.0/1.0 1.8 ASD
Sortie Generation Rates - STOVL Variant (USMC)				
6.0/4.0/2.0 1.1 ASD	6.0/4.0/2.0 1.1 ASD	4.0/3.0/1.0 1.1 ASD	5.5/4.0/2.0 1.1 ASD	5.5/4.0/2.0 1.1 ASD
CV Recovery Performance (Vpa)				
Vpa. Maximum approach speed (Vpa) at required carrier landing weight (RCLW) of less than 140 knots.	Vpa at required carrier landing weight (RCLW) of less than 140 knots.	Vpa at required carrier landing weight (RCLW) of less than 145 knots.	Vpa. Maximum approach speed (Vpa) at required carrier landing weight (RCLW) of less than 143 knots.	Vpa. Maximum approach speed (Vpa) at required carrier landing weight (RCLW) of less than 143 knots. (Ch-3)

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

Operational Requirements Document (ORD) Change 3 dated August 19, 2008 as modified by Joint Requirements Oversight Council Memorandum 040-12 dated March 16, 2012

Change Explanations

(Ch-1) This is the SDD end state for F-35 KPPs. Aero performance related values are final SDD assessments.
(Ch-2) This is the SDD end state for F-35 KPPs. Aero performance related values are final SDD assessments.
(Ch-3) This is the SDD end state for F-35 KPPs. Aero performance related values are final SDD assessments.

Acronyms and Abbreviations

ASD - Average Sortie Duration
CTOL - Conventional Takeoff and Landing
CU FT - Cubic Feet
CV - Aircraft Carrier Suitable Variant
JDAM - Joint Direct Attack Munitions
KTS - Knots
NM - Nautical Miles
RCLW - Required Carrier Landing Weight
SGR - Sortie Generation Rate
ST - Short Tons
STO - Short Takeoff
STOVL - Short Takeoff and Vertical Landing
Vpa - Max Approach Speed
WOD - Wind Over the Deck

F-35 Engine

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
See Note				
N/A	N/A	N/A	TBD	N/A

Requirements Reference

Operational Requirements Document (ORD) Change 3 dated August 19, 2008 as modified by Joint Requirements Oversight Council Memorandum 040-12 dated March 16, 2012

Change Explanations

None

Notes

Performance characteristics for the F-35 Engine subprogram are captured as part of the system-level performance characteristics reflected in the F-35 Aircraft subprogram.

Track to Budget

F-35 Aircraft

General Notes

F-35 is DoD's largest cooperative development program. In addition to DoD's funding lines, eight International Partners are providing funding in the System Development and Demonstration (SDD) Phase under a Memorandum of Understanding (MOU): United Kingdom, Italy, The Netherlands, Turkey, Canada, Australia, Denmark, and Norway. All but Turkey and Australia were partners in the prior phase. Associated financial contributions are reflected in the Annual Funding section as Appropriation 9999, RDT&E Non-Treasury Funds. RDT&E cost excludes Continuous Capability Development and Delivery (C2D2) Block 4 Funding; F-35B/C Sustainment/Capability Enhancements; F-35A Deployability and Suitability Enhancements; and F-35A Dual Capable Aircraft Enhancements.

RDT&E

Appn		BA	PE	
Navy	1319	04	0603800N	
	Project		**Name**	
	2209		RDT&E, Navy CDP	(Sunk)
Navy	1319	05	0604800M	
	Project		**Name**	
	2262		Joint Strike Fighter - EMD	
Navy	1319	05	0604800N	
	Project		**Name**	
	2261		JT Strike Fighter - EMD	
	3194		RDT&E, Navy EMD/Joint Reprogramming Center	(Sunk)
Air Force	3600	04	0603800F	
	Project		**Name**	
	2025		RDT&E, Air Force CDP	(Sunk)
Air Force	3600	05	0604800F	
	Project		**Name**	
	3831		F-35 - EMD	
Defense-Wide	0400	03	0603800E	
	Project		**Name**	
			RDT&E, DARPA	(Sunk)
Defense-Wide	9999	05		
	Project		**Name**	
			RDT&E, Non-Treasury Funds	

Procurement

Appn		BA	PE
Navy	1506	01	0204146N
	Line Item		**Name**

	0147	Joint Strike Fighter CV	
Navy	1506 01	0204146M	
	Line Item	Name	
	0152	JSF STOVL	
Navy	1506 05	0204146M	
	Line Item	Name	
	0592	F-35 STOVL Series	
Navy	1506 05	0204146N	
	Line Item	Name	
	0593	F-35 CV Series	
Navy	1506 06	0204146N	
	Line Item	Name	
	0605	Spares and Repair Parts	(Shared)
Navy	1506 06	0204146M	
	Line Item	Name	
	0605	Spares and Repair Parts	(Shared)
Air Force	3010 06	0207142F	
	Line Item	Name	
	000999	Initial Spares/Repair Parts	(Shared)
Air Force	3010 01	0207142F	
	Line Item	Name	
	ATA000	F-35	
Air Force	3010 05	0207142F	
	Line Item	Name	
	F03500	F-35 Modifications	

MILCON

Appn	BA	PE	
Navy	1205 01	0202176M	
	Project	Name	
	VARIOUS	MILCON, USN	(Shared)
Navy	1205 01	0212176N	
	Project	Name	
	VARIOUS	MILCON, USN	(Shared)
Navy	1205 01	0216496M	
	Project	Name	
	VARIOUS	MILCON, USN	(Shared)
Navy	1205 01	0703676N	
	Project	Name	
	VARIOUS	MILCON, USN	(Shared)
Navy	1205 01	0712876N	
	Project	Name	

	VARIOUS		MILCON, USN	(Shared)
Navy	1205	01	0815976N	
	Project		**Name**	
	VARIOUS		MILCON, USN	(Shared)
Air Force	3300	01	0207142F	
	Project		**Name**	
	VARIOUS		MILCON, AF	(Shared)
Air Force	3300	01	0207597F	
	Project		**Name**	
	VARIOUS		MILCON, AF	(Shared)

F-35 Engine

General Notes

F-35 is DoD's largest cooperative development program. In addition to DoD's funding lines, eight International Partners are providing funding in the System Development and Demonstration (SDD) Phase under a Memorandum of Understanding (MOU): United Kingdom, Italy, The Netherlands, Turkey, Canada, Australia, Denmark, and Norway. All but Turkey and Australia were partners in the prior phase. Associated financial contributions are reflected in the Annual Funding section as Appropriation 9999, RDT&E Non-Treasury Funds. RDT&E cost excludes Continuous Capability Development and Delivery (C2D2) Block 4 funding; F-35B/C Sustainment/Capability Enhancements; F-35A Deployability and Suitability Enhancements; and F-35A Dual Capable Aircraft Enhancements.

RDT&E

Appn		BA	PE	
Navy	1319	04	0603800N	
	Project		**Name**	
	2209		RDT&E, Navy CDP	(Sunk)
Navy	1319	05	0604800M	
	Project		**Name**	
	2262		RDT&E, Marine Corps	
Navy	1319	05	0604800N	
	Project		**Name**	
	2261		RDT&E, Navy EMD/JSF	
	3194		RDT&E, Navy EMD/Joint Reprogramming Center	(Sunk)
	9999		RDT&E, Navy EMD/Congressional Adds	(Sunk)
Air Force	3600	04	0603800F	
	Project		**Name**	
	2025		RDT&E, Air Force CDP	(Sunk)
Air Force	3600	05	0604800F	
	Project		**Name**	
	3831		RDT&E, Air Force EMD/Joint Strike Fighter Quantity of RDT&E Articles	
Defense-Wide	0400	03	0603800E	

Project	Name	
	RDT&E, DARPA	(Sunk)

Defense-Wide 9999 05

Project	Name
	RDT&E, Non-Treasury Funds

Procurement

Appn	BA	PE		
Navy	1506	01	0204146N	
	Line Item	Name		
	0147	JSF (Navy)		
Navy	1506	01	0204146M	
	Line Item	Name		
	0152	JSF (Marine Corps)		
Navy	1506	06	0204146N	
	Line Item	Name		
	0605	Initial Spares (Navy)		(Shared)
Navy	1506	06	0204146M	
	Line Item	Name		
	0605	Initial Spares (Marine Corps)		(Shared)
Air Force	3010	06	0207142F	
	Line Item	Name		
	000999	Initial Spares (Air Force)		(Shared)
Air Force	3010	01	0207142F	
	Line Item	Name		
	ATA000	JSF (Air Force)		
Air Force	3010	05	0207142F	
	Line Item	Name		
	F03500	Mods (Air Force)		

Cost and Funding

Cost Summary - Total Program

Total Acquisition Cost - Total Program							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	59677.3	59398.1	--	59790.0	55233.8	55182.9	55464.4
Procurement	266665.8	266665.8	--	260864.5	335680.7	335680.7	345408.0
Flyaway	--	--	--	231537.3	--	--	309754.6
Recurring	--	--	--	207559.0	--	--	278662.4
Non Recurring	--	--	--	23978.3	--	--	31092.2
Support	--	--	--	29327.2	--	--	35653.4
Other Support	--	--	--	18597.0	--	--	22688.9
Initial Spares	--	--	--	10730.2	--	--	12964.5
MILCON	4168.0	4168.0	--	4441.3	4797.3	4797.3	5258.6
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	330511.1	330231.9	N/A	325095.8	395711.8	395660.9	406131.0

Cost and Funding

Cost Summary - F-35 Aircraft

Total Acquisition Cost - F-35 Aircraft							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	47982.1	46457.5	51103.3	46673.1	44410.1	43360.7	43506.7
Procurement	224332.9	224332.9	246766.2	220601.2	282647.8	282647.8	292727.0
Flyaway	--	--	--	196512.8	--	--	263426.3
Recurring	--	--	--	175099.5	--	--	235550.5
Non Recurring	--	--	--	21413.3	--	--	27875.8
Support	--	--	--	24088.4	--	--	29300.7
Other Support	--	--	--	16504.7	--	--	20165.9
Initial Spares	--	--	--	7583.7	--	--	9134.8
MILCON	4168.0	4168.0	4584.8	4441.3	4797.3	4797.3	5258.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	276483.0	274958.4	N/A	271715.6	331855.2	330805.8	341492.3

Current APB Cost Estimate Reference

Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) dated March 09, 2012

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity - F-35 Aircraft			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	14	14	14
Procurement	2443	2443	2456
Total	2457	2457	2470

Quantity Notes

The current estimate for F-35 total procurement quantity increase from 2443 to 2456 has not changed from SAR 2016 to SAR 2017. This increase was the result of two changes: a USMC variant mixture change between the F-35B and F-35C (13 additional F-35Bs and 13 less F-35Cs), and the Department of Navy (DoN) decision to continue to procure a total of 340 F-35C aircraft. This results in a net increase of 13 F-35B aircraft. The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the DoN Aircraft Procurement accounts. The USMC validated their requirement through the Marine Corps Requirements Oversight Council (MROC).

Cost Summary - F-35 Engine

Total Acquisition Cost - F-35 Engine							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	11695.2	12940.6	14234.7	13116.9	10823.7	11822.2	11957.7
Procurement	42332.9	42332.9	46566.2	40263.3	53032.9	53032.9	52681.0
Flyaway	--	--	--	35024.5	--	--	46328.3
Recurring	--	--	--	32459.5	--	--	43111.9
Non Recurring	--	--	--	2565.0	--	--	3216.4
Support	--	--	--	5238.8	--	--	6352.7
Other Support	--	--	--	2092.3	--	--	2523.0
Initial Spares	--	--	--	3146.5	--	--	3829.7
MILCON	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
Total	54028.1	55273.5	N/A	53380.2	63856.6	64855.1	64638.7

Current APB Cost Estimate Reference

Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) dated March 09, 2012

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity - F-35 Engine			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	14	14	14
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Quantity Notes

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Cost and Funding

Funding Summary - Total Program

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	54721.3	527.8	196.1	10.9	6.5	0.9	0.9	0.0	55464.4
Procurement	65686.9	9659.9	9430.6	10427.5	11967.9	11894.6	12422.7	213917.9	345408.0
MILCON	2143.3	269.3	448.3	129.9	136.5	116.1	315.5	1699.7	5258.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	122551.5	10457.0	10075.0	10568.3	12110.9	12011.6	12739.1	215617.6	406131.0
PB 2018 Total	122579.8	10457.0	9819.4	11043.7	12617.4	12223.9	14265.2	213474.5	406480.9
Delta	-28.3	0.0	255.6	-475.4	-506.5	-212.3	-1526.1	2143.1	-349.9

Cost and Funding

Funding Summary - F-35 Aircraft

Appropriation Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	42791.8	499.6	196.1	10.9	6.5	0.9	0.9	0.0	43506.7
Procurement	55813.4	7999.2	7793.8	8668.5	9947.5	9870.0	10287.0	182347.6	292727.0
MILCON	2143.3	269.3	448.3	129.9	136.5	116.1	315.5	1699.7	5258.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2019 Total	100748.5	8768.1	8438.2	8809.3	10090.5	9987.0	10603.4	184047.3	341492.3
PB 2018 Total	100978.1	8796.3	8270.7	9221.5	10516.9	10179.3	11843.6	182275.5	342081.9
Delta	-229.6	-28.2	167.5	-412.2	-426.4	-192.3	-1240.2	1771.8	-589.6

Quantity Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	14	0	0	0	0	0	0	0	0	14
Production	0	359	70	77	84	98	98	99	1571	2456
PB 2019 Total	14	359	70	77	84	98	98	99	1571	2470
PB 2018 Total	14	359	70	77	84	99	99	105	1563	2470
Delta	0	0	0	0	0	-1	-1	-6	8	0

Funding Summary - F-35 Engine

Appropriation Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	11929.5	28.2	0.0	0.0	0.0	0.0	0.0	0.0	11957.7
Procurement	9873.5	1660.7	1636.8	1759.0	2020.4	2024.6	2135.7	31570.3	52681.0
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 2019 Total	21803.0	1688.9	1636.8	1759.0	2020.4	2024.6	2135.7	31570.3	64638.7
PB 2018 Total	21601.7	1660.7	1548.7	1822.2	2100.5	2044.6	2421.6	31199.0	64399.0
Delta	201.3	28.2	88.1	-63.2	-80.1	-20.0	-285.9	371.3	239.7

Quantity Summary FY 2019 President's Budget / December 2017 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	14	0	0	0	0	0	0	0	0	14
Production	0	359	70	77	84	98	98	99	1571	2456
PB 2019 Total	14	359	70	77	84	98	98	99	1571	2470
PB 2018 Total	14	359	70	77	84	99	99	105	1563	2470
Delta	0	0	0	0	0	-1	-1	-6	8	0

Cost and Funding

Annual Funding By Appropriation - F-35 Aircraft

Annual Funding - F-35 Aircraft 0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide							
		TY $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	23.2
1997	--	--	--	--	--	--	54.8
1998	--	--	--	--	--	--	16.9
Subtotal	--	--	--	--	--	--	94.9

Annual Funding - F-35 Aircraft 0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	30.1
1997	--	--	--	--	--	--	70.2
1998	--	--	--	--	--	--	21.5
Subtotal	--	--	--	--	--	--	121.8

Annual Funding - F-35 Aircraft 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
		TY $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1995	--	--	--	--	--	--	67.5
1996	--	--	--	--	--	--	65.4
1997	--	--	--	--	--	--	202.3
1998	--	--	--	--	--	--	357.2
1999	--	--	--	--	--	--	366.5
2000	--	--	--	--	--	--	200.3
2001	--	--	--	--	--	--	274.3
2002	--	--	--	--	--	--	302.6
2003	--	--	--	--	--	--	1210.1
2004	--	--	--	--	--	--	1584.1
2005	--	--	--	--	--	--	1465.8
2006	--	--	--	--	--	--	1678.6
2007	--	--	--	--	--	--	1632.4
2008	--	--	--	--	--	--	1359.0
2009	--	--	--	--	--	--	1197.5
2010	--	--	--	--	--	--	1567.4
2011	--	--	--	--	--	--	715.4
2012	--	--	--	--	--	--	1262.2
2013	--	--	--	--	--	--	972.1
2014	--	--	--	--	--	--	553.6
2015	--	--	--	--	--	--	462.9
2016	--	--	--	--	--	--	459.2
2017	--	--	--	--	--	--	342.3
2018	--	--	--	--	--	--	240.3
2019	--	--	--	--	--	--	69.0
2020	--	--	--	--	--	--	7.7
2021	--	--	--	--	--	--	5.6
Subtotal	5	--	--	--	--	--	18621.3

Annual Funding - F-35 Aircraft 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
1995	--	--	--	--	--	--	89.1
1996	--	--	--	--	--	--	84.9
1997	--	--	--	--	--	--	259.5
1998	--	--	--	--	--	--	454.5
1999	--	--	--	--	--	--	460.9
2000	--	--	--	--	--	--	248.3
2001	--	--	--	--	--	--	335.4
2002	--	--	--	--	--	--	366.3
2003	--	--	--	--	--	--	1443.6
2004	--	--	--	--	--	--	1838.4
2005	--	--	--	--	--	--	1657.5
2006	--	--	--	--	--	--	1840.8
2007	--	--	--	--	--	--	1747.3
2008	--	--	--	--	--	--	1428.6
2009	--	--	--	--	--	--	1242.9
2010	--	--	--	--	--	--	1602.8
2011	--	--	--	--	--	--	714.5
2012	--	--	--	--	--	--	1240.1
2013	--	--	--	--	--	--	945.2
2014	--	--	--	--	--	--	530.8
2015	--	--	--	--	--	--	438.5
2016	--	--	--	--	--	--	427.7
2017	--	--	--	--	--	--	313.6
2018	--	--	--	--	--	--	216.4
2019	--	--	--	--	--	--	61.0
2020	--	--	--	--	--	--	6.7
2021	--	--	--	--	--	--	4.8
Subtotal	5	--	--	--	--	--	20000.1

Annual Funding - F-35 Aircraft 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	23.7
1995	--	--	--	--	--	--	78.7
1996	--	--	--	--	--	--	64.6
1997	--	--	--	--	--	--	195.6
1998	--	--	--	--	--	--	360.4
1999	--	--	--	--	--	--	378.9
2000	--	--	--	--	--	--	191.7
2001	--	--	--	--	--	--	274.3
2002	--	--	--	--	--	--	370.8
2003	--	--	--	--	--	--	1090.1
2004	--	--	--	--	--	--	1548.2
2005	--	--	--	--	--	--	1511.3
2006	--	--	--	--	--	--	1657.3
2007	--	--	--	--	--	--	1470.7
2008	--	--	--	--	--	--	1285.0
2009	--	--	--	--	--	--	1271.2
2010	--	--	--	--	--	--	1440.5
2011	--	--	--	--	--	--	987.9
2012	--	--	--	--	--	--	960.1
2013	--	--	--	--	--	--	1081.9
2014	--	--	--	--	--	--	683.6
2015	--	--	--	--	--	--	774.0
2016	--	--	--	--	--	--	849.2
2017	--	--	--	--	--	--	937.9
2018	--	--	--	--	--	--	231.8
2019	--	--	--	--	--	--	127.1
2020	--	--	--	--	--	--	3.2
2021	--	--	--	--	--	--	0.9
2022	--	--	--	--	--	--	0.9
2023	--	--	--	--	--	--	0.9
Subtotal	9	--	--	--	--	--	19852.4

Annual Funding - F-35 Aircraft 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
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	--	--	--	--	--	--	31.9
1995	--	--	--	--	--	--	103.9
1996	--	--	--	--	--	--	83.9
1997	--	--	--	--	--	--	250.9
1998	--	--	--	--	--	--	458.6
1999	--	--	--	--	--	--	476.5
2000	--	--	--	--	--	--	237.6
2001	--	--	--	--	--	--	335.4
2002	--	--	--	--	--	--	448.8
2003	--	--	--	--	--	--	1300.4
2004	--	--	--	--	--	--	1796.8
2005	--	--	--	--	--	--	1709.0
2006	--	--	--	--	--	--	1817.4
2007	--	--	--	--	--	--	1574.3
2008	--	--	--	--	--	--	1350.8
2009	--	--	--	--	--	--	1319.4
2010	--	--	--	--	--	--	1473.0
2011	--	--	--	--	--	--	986.6
2012	--	--	--	--	--	--	943.3
2013	--	--	--	--	--	--	1052.0
2014	--	--	--	--	--	--	655.5
2015	--	--	--	--	--	--	733.2
2016	--	--	--	--	--	--	790.9
2017	--	--	--	--	--	--	859.2
2018	--	--	--	--	--	--	208.8
2019	--	--	--	--	--	--	112.4
2020	--	--	--	--	--	--	2.8
2021	--	--	--	--	--	--	0.8
2022	--	--	--	--	--	--	0.7
2023	--	--	--	--	--	--	0.7
Subtotal	9	--	--	--	--	--	21115.5

Annual Funding - F-35 Aircraft 9999 | RDT&E | Non Treasury Funds							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	11.3
1997	--	--	--	--	--	--	67.1
1998	--	--	--	--	--	--	72.1
1999	--	--	--	--	--	--	49.0
2000	--	--	--	--	--	--	25.2
2001	--	--	--	--	--	--	9.5
2002	--	--	--	--	--	--	255.8
2003	--	--	--	--	--	--	298.7
2004	--	--	--	--	--	--	486.7
2005	--	--	--	--	--	--	734.8
2006	--	--	--	--	--	--	801.3
2007	--	--	--	--	--	--	635.3
2008	--	--	--	--	--	--	574.0
2009	--	--	--	--	--	--	236.0
2010	--	--	--	--	--	--	133.2
2011	--	--	--	--	--	--	169.4
2012	--	--	--	--	--	--	126.8
2013	--	--	--	--	--	--	148.5
2014	--	--	--	--	--	--	21.9
2015	--	--	--	--	--	--	15.0
2016	--	--	--	--	--	--	17.0
2017	--	--	--	--	--	--	22.0
2018	--	--	--	--	--	--	27.5
Subtotal	--	--	--	--	--	--	4938.1

Annual Funding - F-35 Aircraft 9999 | RDT&E | Non Treasury Funds							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	14.7
1997	--	--	--	--	--	--	86.1
1998	--	--	--	--	--	--	91.7
1999	--	--	--	--	--	--	61.6
2000	--	--	--	--	--	--	31.2
2001	--	--	--	--	--	--	11.6
2002	--	--	--	--	--	--	309.6
2003	--	--	--	--	--	--	356.3
2004	--	--	--	--	--	--	564.8
2005	--	--	--	--	--	--	830.9
2006	--	--	--	--	--	--	878.7
2007	--	--	--	--	--	--	680.0
2008	--	--	--	--	--	--	603.4
2009	--	--	--	--	--	--	244.9
2010	--	--	--	--	--	--	136.2
2011	--	--	--	--	--	--	169.2
2012	--	--	--	--	--	--	124.6
2013	--	--	--	--	--	--	144.4
2014	--	--	--	--	--	--	21.0
2015	--	--	--	--	--	--	14.2
2016	--	--	--	--	--	--	15.8
2017	--	--	--	--	--	--	20.1
2018	--	--	--	--	--	--	24.7
Subtotal	--	--	--	--	--	--	5435.7

Annual Funding - F-35 Aircraft 3010 | Procurement | Aircraft 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
2006	--	107.6	--	--	107.6	--	107.6
2007	2	428.5	--	80.8	509.3	91.1	600.4
2008	6	983.1	--	172.3	1155.4	131.5	1286.9
2009	7	1009.2	--	277.6	1286.8	175.8	1462.6
2010	10	1471.2	--	355.7	1826.9	277.7	2104.6
2011	22	2751.2	--	569.1	3320.3	679.6	3999.9
2012	18	2041.5	--	375.7	2417.2	773.0	3190.2
2013	19	2074.6	--	76.6	2151.2	528.9	2680.1
2014	19	2034.6	--	586.7	2621.3	433.0	3054.3
2015	28	2715.8	--	542.0	3257.8	623.0	3880.8
2016	47	4076.0	--	503.5	4579.5	626.3	5205.8
2017	48	3799.3	--	213.8	4013.1	606.9	4620.0
2018	46	3730.5	--	613.5	4344.0	542.2	4886.2
2019	48	3352.1	--	507.6	3859.7	605.4	4465.1
2020	48	3652.0	--	590.3	4242.3	547.1	4789.4
2021	54	4028.8	--	403.7	4432.5	868.1	5300.6
2022	54	3906.9	--	482.6	4389.5	676.2	5065.7
2023	54	4412.8	--	339.2	4752.0	634.4	5386.4
2024	60	4716.6	--	552.0	5268.6	825.6	6094.2
2025	60	4275.5	--	552.6	4828.1	649.8	5477.9
2026	60	4328.6	--	549.9	4878.5	496.5	5375.0
2027	60	4794.9	--	512.3	5307.2	549.5	5856.7
2028	60	5509.5	--	524.1	6033.6	488.0	6521.6
2029	60	5142.9	--	533.1	5676.0	544.9	6220.9
2030	60	4711.1	--	541.9	5253.0	476.7	5729.7
2031	60	5023.9	--	559.3	5583.2	484.9	6068.1
2032	60	5794.1	--	586.3	6380.4	554.0	6934.4
2033	60	6758.5	--	603.5	7362.0	588.6	7950.6
2034	60	6433.6	--	611.1	7044.7	390.6	7435.3
2035	60	5869.6	--	618.8	6488.4	359.7	6848.1
2036	60	5983.7	--	630.4	6614.1	414.4	7028.5
2037	60	6550.5	--	683.7	7234.2	401.4	7635.6
2038	60	7434.2	--	698.9	8133.1	469.0	8602.1
2039	60	7123.5	--	712.2	7835.7	448.8	8284.5
2040	60	6516.7	--	720.7	7237.4	222.0	7459.4
2041	60	6649.9	--	729.2	7379.1	26.8	7405.9
2042	60	7301.4	--	735.2	8036.6	--	8036.6
2043	60	7327.5	--	640.2	7967.7	--	7967.7
2044	33	5020.2	--	409.5	5429.7	--	5429.7
Subtotal	1763	169842.1	--	19395.6	189237.7	17211.4	206449.1

Annual Funding - F-35 Aircraft 3010 | Procurement | Aircraft 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
2006	--	116.3	--	--	116.3	--	116.3
2007	2	452.5	--	85.4	537.9	96.2	634.1
2008	6	1022.9	--	179.3	1202.2	136.8	1339.0
2009	7	1035.7	--	284.7	1320.4	180.5	1500.9
2010	10	1478.8	--	357.6	1836.4	279.1	2115.5
2011	22	2711.9	--	561.0	3272.9	669.9	3942.8
2012	18	1984.2	--	365.2	2349.4	751.3	3100.7
2013	19	1995.2	--	73.7	2068.9	508.6	2577.5
2014	19	1932.1	--	557.1	2489.2	411.2	2900.4
2015	28	2542.3	--	507.3	3049.6	583.2	3632.8
2016	47	3747.4	--	462.9	4210.3	575.8	4786.1
2017	48	3433.9	--	193.2	3627.1	548.5	4175.6
2018	46	3311.5	--	544.7	3856.2	481.3	4337.5
2019	48	2919.4	--	442.1	3361.5	527.3	3888.8
2020	48	3118.7	--	504.1	3622.8	467.2	4090.0
2021	54	3373.0	--	338.0	3711.0	726.8	4437.8
2022	54	3206.8	--	396.1	3602.9	555.1	4158.0
2023	54	3551.1	--	273.0	3824.1	510.4	4334.5
2024	60	3721.1	--	435.5	4156.6	651.4	4808.0
2025	60	3307.0	--	427.4	3734.4	502.6	4237.0
2026	60	3282.4	--	417.0	3699.4	376.5	4075.9
2027	60	3564.7	--	380.9	3945.6	408.5	4354.1
2028	60	4015.7	--	382.0	4397.7	355.6	4753.3
2029	60	3675.0	--	381.0	4056.0	389.3	4445.3
2030	60	3300.4	--	379.7	3680.1	333.9	4014.0
2031	60	3450.5	--	384.1	3834.6	333.1	4167.7
2032	60	3901.5	--	394.8	4296.3	373.0	4669.3
2033	60	4461.6	--	398.5	4860.1	388.5	5248.6
2034	60	4163.9	--	395.5	4559.4	252.8	4812.2
2035	60	3724.4	--	392.6	4117.0	228.2	4345.2
2036	60	3722.3	--	392.3	4114.6	257.7	4372.3
2037	60	3995.0	--	417.0	4412.0	244.8	4656.8
2038	60	4445.0	--	418.0	4863.0	280.4	5143.4
2039	60	4175.8	--	417.4	4593.2	263.1	4856.3
2040	60	3745.2	--	414.1	4159.3	127.6	4286.9
2041	60	3746.8	--	410.8	4157.6	15.1	4172.7
2042	60	4033.2	--	406.1	4439.3	--	4439.3
2043	60	3968.2	--	346.7	4314.9	--	4314.9
2044	33	2665.4	--	217.4	2882.8	--	2882.8
Subtotal	1763	120998.8	--	14334.2	135333.0	13791.3	149124.3

Cost Quantity Information - F-35 Aircraft 3010 | Procurement | Aircraft Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2006	--	--
2007	2	452.5
2008	6	1022.9
2009	7	1035.7
2010	10	1478.8
2011	22	2711.9
2012	18	1984.2
2013	19	1995.2
2014	19	1932.1
2015	28	2542.3
2016	47	3747.4
2017	48	3433.9
2018	46	3311.5
2019	48	2919.4
2020	48	3118.7
2021	54	3373.0
2022	54	3206.8
2023	54	3551.1
2024	60	3721.1
2025	60	3307.0
2026	60	3282.4
2027	60	3564.7
2028	60	4015.7
2029	60	3675.0
2030	60	3300.4
2031	60	3450.5
2032	60	3901.5
2033	60	4461.6
2034	60	4163.9
2035	60	3724.4
2036	60	3722.3
2037	60	3995.0
2038	60	4445.0
2039	60	4175.8
2040	60	3745.2
2041	60	3746.8
2042	60	4033.2
2043	60	3968.2
2044	33	2781.7

Subtotal	1763	120998.8

Annual Funding - F-35 Aircraft 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	96.9	--	--	96.9	--	96.9
2008	6	923.2	--	38.6	961.8	10.7	972.5
2009	7	1062.0	--	182.0	1244.0	206.1	1450.1
2010	20	2681.2	--	305.4	2986.6	560.9	3547.5
2011	10	1494.8	--	251.0	1745.8	431.8	2177.6
2012	13	1477.7	--	330.2	1807.9	746.7	2554.6
2013	10	1107.3	--	44.1	1151.4	557.3	1708.7
2014	10	1205.5	--	375.6	1581.1	642.3	2223.4
2015	10	1115.0	--	636.3	1751.3	414.1	2165.4
2016	21	2130.3	--	573.1	2703.4	629.9	3333.3
2017	26	2502.2	--	264.8	2767.0	623.2	3390.2
2018	24	2287.3	--	347.4	2634.7	478.3	3113.0
2019	29	2336.1	--	306.2	2642.3	686.4	3328.7
2020	36	3057.3	--	275.2	3332.5	546.6	3879.1
2021	44	3940.7	--	278.7	4219.4	427.5	4646.9
2022	44	4008.7	--	315.1	4323.8	480.5	4804.3
2023	45	4111.4	--	331.2	4442.6	458.0	4900.6
2024	45	4083.1	--	407.2	4490.3	661.3	5151.6
2025	45	3680.7	--	413.4	4094.1	577.8	4671.9
2026	45	3680.0	--	409.1	4089.1	472.0	4561.1
2027	45	4028.4	--	392.6	4421.0	404.0	4825.0
2028	45	4363.3	--	404.5	4767.8	424.5	5192.3
2029	45	4248.9	--	397.5	4646.4	233.1	4879.5
2030	41	3607.9	--	368.7	3976.6	303.1	4279.7
2031	24	2170.9	--	492.4	2663.3	626.2	3289.5
2032	3	307.6	--	339.9	647.5	487.0	1134.5
Subtotal	693	65708.4	--	8480.2	74188.6	12089.3	86277.9

Annual Funding - F-35 Aircraft 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	102.3	--	--	102.3	--	102.3
2008	6	960.6	--	40.2	1000.8	11.1	1011.9
2009	7	1089.8	--	186.8	1276.6	211.5	1488.1
2010	20	2695.1	--	307.0	3002.1	563.8	3565.9
2011	10	1473.5	--	247.4	1720.9	425.6	2146.5
2012	13	1436.2	--	320.9	1757.1	725.8	2482.9
2013	10	1064.9	--	42.4	1107.3	536.0	1643.3
2014	10	1144.7	--	356.7	1501.4	609.9	2111.3
2015	10	1043.8	--	595.6	1639.4	387.6	2027.0
2016	21	1958.6	--	526.8	2485.4	579.2	3064.6
2017	26	2261.5	--	239.3	2500.8	563.3	3064.1
2018	24	2030.4	--	308.5	2338.9	424.5	2763.4
2019	29	2034.6	--	266.7	2301.3	597.8	2899.1
2020	36	2610.9	--	235.0	2845.9	466.8	3312.7
2021	44	3299.3	--	233.2	3532.5	358.0	3890.5
2022	44	3290.4	--	258.6	3549.0	394.4	3943.4
2023	45	3308.5	--	266.5	3575.0	368.6	3943.6
2024	45	3221.3	--	321.3	3542.6	521.7	4064.3
2025	45	2846.9	--	319.8	3166.7	446.9	3613.6
2026	45	2790.6	--	310.2	3100.8	357.9	3458.7
2027	45	2994.9	--	291.8	3286.7	300.4	3587.1
2028	45	3180.2	--	294.9	3475.1	309.4	3784.5
2029	45	3036.1	--	284.0	3320.1	166.6	3486.7
2030	41	2527.5	--	258.4	2785.9	212.3	2998.2
2031	24	1491.0	--	338.2	1829.2	430.1	2259.3
2032	3	207.1	--	228.9	436.0	327.9	763.9
Subtotal	693	54100.7	--	7079.1	61179.8	10297.1	71476.9

Cost Quantity Information - F-35 Aircraft 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2007	--	--
2008	6	960.6
2009	7	1089.8
2010	20	2695.1
2011	10	1473.5
2012	13	1436.2
2013	10	1064.9
2014	10	1144.7
2015	10	1043.8
2016	21	1958.6
2017	26	2261.5
2018	24	2030.4
2019	29	2034.6
2020	36	2610.9
2021	44	3299.3
2022	44	3290.4
2023	45	3308.5
2024	45	3221.3
2025	45	2846.9
2026	45	2790.6
2027	45	2994.9
2028	45	3180.2
2029	45	3036.1
2030	41	2527.5
2031	24	1491.0
2032	3	309.4
Subtotal	693	54100.7

Annual Funding - F-35 Aircraft 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	TY $M Total Program
2004	24.4
2005	--
2006	0.1
2007	--
2008	0.2
2009	0.7
2010	34.1
2011	377.9
2012	172.2
2013	94.9
2014	1.2
2015	118.4
2016	64.7
2017	66.7
2018	15.7
2019	133.2
2020	25.5
2021	111.5
2022	41.1
2023	265.5
2024	165.0
2025	274.7
2026	91.9
2027	100.0
2028	85.1
2029	111.7
Subtotal	2376.4

Annual Funding - F-35 Aircraft 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	BY 2012 $M
	Total Program
2004	27.8
2005	--
2006	0.1
2007	--
2008	0.2
2009	0.7
2010	34.1
2011	369.4
2012	165.9
2013	90.2
2014	1.1
2015	108.4
2016	58.2
2017	59.0
2018	13.6
2019	113.3
2020	21.3
2021	91.1
2022	32.9
2023	208.6
2024	127.1
2025	207.4
2026	68.0
2027	72.6
2028	60.6
2029	77.9
Subtotal	2009.5

All DoN MILCON funding is reflected in the Aircraft subprogram.

Annual Funding - F-35 Aircraft 3300 | MILCON | Military Construction, Air Force	
Fiscal Year	TY $M Total Program
2004	1.7
2005	10.0
2006	--
2007	--
2008	100.3
2009	116.0
2010	125.1
2011	139.6
2012	24.3
2013	13.5
2014	56.0
2015	66.7
2016	198.3
2017	336.3
2018	253.6
2019	315.1
2020	104.4
2021	25.0
2022	75.0
2023	50.0
2024	71.1
2025	61.1
2026	59.3
2027	128.9
2028	115.9
2029	116.8
2030	108.7
2031	71.7
2032	71.2
2033	37.5
2034	24.8
2035	4.3
Subtotal	2882.2

Annual Funding - F-35 Aircraft 3300 | MILCON | Military Construction, Air Force	
Fiscal Year	BY 2012 $M
	Total Program
2004	1.9
2005	11.1
2006	--
2007	--
2008	104.1
2009	118.8
2010	125.0
2011	136.5
2012	23.4
2013	12.8
2014	52.5
2015	61.1
2016	178.5
2017	297.2
2018	219.9
2019	268.0
2020	87.0
2021	20.4
2022	60.1
2023	39.3
2024	54.8
2025	46.1
2026	43.9
2027	93.6
2028	82.5
2029	81.5
2030	74.3
2031	48.1
2032	46.8
2033	24.2
2034	15.7
2035	2.7
Subtotal	2431.8

All Air Force F-35 MILCON funding is reflected in the Aircraft subprogram.

Annual Funding By Appropriation - F-35 Engine

Annual Funding - F-35 Engine 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
1995	--	--	--	--	--	--	16.4
1996	--	--	--	--	--	--	15.9
1997	--	--	--	--	--	--	49.3
1998	--	--	--	--	--	--	87.1
1999	--	--	--	--	--	--	89.4
2000	--	--	--	--	--	--	48.8
2001	--	--	--	--	--	--	66.9
2002	--	--	--	--	--	--	409.8
2003	--	--	--	--	--	--	400.5
2004	--	--	--	--	--	--	435.8
2005	--	--	--	--	--	--	614.3
2006	--	--	--	--	--	--	586.3
2007	--	--	--	--	--	--	441.6
2008	--	--	--	--	--	--	596.0
2009	--	--	--	--	--	--	544.6
2010	--	--	--	--	--	--	466.1
2011	--	--	--	--	--	--	216.2
2012	--	--	--	--	--	--	101.8
2013	--	--	--	--	--	--	143.6
2014	--	--	--	--	--	--	52.0
2015	--	--	--	--	--	--	53.7
2016	--	--	--	--	--	--	36.5
2017	--	--	--	--	--	--	44.6
2018	--	--	--	--	--	--	15.4
Subtotal	5	--	--	--	--	--	5532.6

Annual Funding - F-35 Engine 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
1995	--	--	--	--	--	--	21.7
1996	--	--	--	--	--	--	20.6
1997	--	--	--	--	--	--	63.2
1998	--	--	--	--	--	--	110.8
1999	--	--	--	--	--	--	112.4
2000	--	--	--	--	--	--	60.5
2001	--	--	--	--	--	--	81.8
2002	--	--	--	--	--	--	496.0
2003	--	--	--	--	--	--	477.8
2004	--	--	--	--	--	--	505.8
2005	--	--	--	--	--	--	694.7
2006	--	--	--	--	--	--	643.0
2007	--	--	--	--	--	--	472.7
2008	--	--	--	--	--	--	626.5
2009	--	--	--	--	--	--	565.2
2010	--	--	--	--	--	--	476.6
2011	--	--	--	--	--	--	215.9
2012	--	--	--	--	--	--	100.0
2013	--	--	--	--	--	--	139.6
2014	--	--	--	--	--	--	49.9
2015	--	--	--	--	--	--	50.9
2016	--	--	--	--	--	--	34.0
2017	--	--	--	--	--	--	40.9
2018	--	--	--	--	--	--	13.9
Subtotal	5	--	--	--	--	--	6074.4

Annual Funding - F-35 Engine 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	5.8
1995	--	--	--	--	--	--	19.3
1996	--	--	--	--	--	--	15.8
1997	--	--	--	--	--	--	47.7
1998	--	--	--	--	--	--	87.8
1999	--	--	--	--	--	--	92.4
2000	--	--	--	--	--	--	46.7
2001	--	--	--	--	--	--	66.9
2002	--	--	--	--	--	--	350.4
2003	--	--	--	--	--	--	550.8
2004	--	--	--	--	--	--	533.2
2005	--	--	--	--	--	--	572.5
2006	--	--	--	--	--	--	528.1
2007	--	--	--	--	--	--	639.1
2008	--	--	--	--	--	--	563.9
2009	--	--	--	--	--	--	433.1
2010	--	--	--	--	--	--	445.7
2011	--	--	--	--	--	--	252.9
2012	--	--	--	--	--	--	187.6
2013	--	--	--	--	--	--	199.2
2014	--	--	--	--	--	--	116.1
2015	--	--	--	--	--	--	172.9
2016	--	--	--	--	--	--	95.1
2017	--	--	--	--	--	--	47.2
2018	--	--	--	--	--	--	12.8
Subtotal	9	--	--	--	--	--	6083.0

Annual Funding - F-35 Engine 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
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	--	--	--	--	--	--	7.8
1995	--	--	--	--	--	--	25.5
1996	--	--	--	--	--	--	20.5
1997	--	--	--	--	--	--	61.2
1998	--	--	--	--	--	--	111.7
1999	--	--	--	--	--	--	116.2
2000	--	--	--	--	--	--	57.9
2001	--	--	--	--	--	--	81.8
2002	--	--	--	--	--	--	424.1
2003	--	--	--	--	--	--	657.1
2004	--	--	--	--	--	--	618.8
2005	--	--	--	--	--	--	647.4
2006	--	--	--	--	--	--	579.1
2007	--	--	--	--	--	--	684.1
2008	--	--	--	--	--	--	592.8
2009	--	--	--	--	--	--	449.5
2010	--	--	--	--	--	--	455.8
2011	--	--	--	--	--	--	252.6
2012	--	--	--	--	--	--	184.3
2013	--	--	--	--	--	--	193.7
2014	--	--	--	--	--	--	111.3
2015	--	--	--	--	--	--	163.8
2016	--	--	--	--	--	--	88.6
2017	--	--	--	--	--	--	43.2
2018	--	--	--	--	--	--	11.5
Subtotal	9	--	--	--	--	--	6640.3

Annual Funding - F-35 Engine 0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide							
		TY $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	5.7
1995	--	--	--	--	--	--	13.4
1996	--	--	--	--	--	--	4.0
Subtotal	--	--	--	--	--	--	23.1

Annual Funding - F-35 Engine 0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide							
		BY 2012 $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	7.7
1995	--	--	--	--	--	--	17.7
1996	--	--	--	--	--	--	5.2
Subtotal	--	--	--	--	--	--	30.6

Annual Funding - F-35 Engine 9999 | RDT&E | Non Treasury Funds							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	2.7
1997	--	--	--	--	--	--	3.9
1998	--	--	--	--	--	--	5.1
1999	--	--	--	--	--	--	5.7
2000	--	--	--	--	--	--	1.8
2001	--	--	--	--	--	--	0.5
2002	--	--	--	--	--	--	43.3
2003	--	--	--	--	--	--	124.8
2004	--	--	--	--	--	--	54.1
2005	--	--	--	--	--	--	0.3
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	75.0
2008	--	--	--	--	--	--	1.4
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	0.1
2012	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	0.3
Subtotal	--	--	--	--	--	--	319.0

Annual Funding - F-35 Engine 9999 | RDT&E | Non Treasury Funds							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1996	--	--	--	--	--	--	3.5
1997	--	--	--	--	--	--	5.0
1998	--	--	--	--	--	--	6.5
1999	--	--	--	--	--	--	7.2
2000	--	--	--	--	--	--	2.2
2001	--	--	--	--	--	--	0.6
2002	--	--	--	--	--	--	52.4
2003	--	--	--	--	--	--	148.9
2004	--	--	--	--	--	--	62.8
2005	--	--	--	--	--	--	0.3
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	80.3
2008	--	--	--	--	--	--	1.5
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	0.1
2012	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	0.3
Subtotal	--	--	--	--	--	--	371.6

Annual Funding - F-35 Engine 3010 | Procurement | Aircraft 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
2006	--	9.8	--	--	9.8	--	9.8
2007	2	47.5	--	6.9	54.4	27.7	82.1
2008	6	123.6	--	35.0	158.6	30.9	189.5
2009	7	127.0	--	63.9	190.9	33.3	224.2
2010	10	176.7	--	72.6	249.3	59.1	308.4
2011	22	353.2	--	91.6	444.8	136.6	581.4
2012	18	275.3	--	65.7	341.0	123.0	464.0
2013	19	262.5	--	11.9	274.4	89.6	364.0
2014	19	282.1	--	31.2	313.3	47.5	360.8
2015	28	386.7	--	15.5	402.2	118.2	520.4
2016	47	606.1	--	23.2	629.3	126.7	756.0
2017	48	641.5	--	1.1	642.6	298.3	940.9
2018	46	646.6	--	46.2	692.8	135.1	827.9
2019	48	585.7	--	38.2	623.9	140.9	764.8
2020	48	645.1	--	44.4	689.5	133.7	823.2
2021	54	719.4	--	30.4	749.8	178.3	928.1
2022	54	691.2	--	36.3	727.5	158.8	886.3
2023	54	777.4	--	25.5	802.9	155.9	958.8
2024	60	845.8	--	41.5	887.3	238.4	1125.7
2025	60	766.3	--	41.6	807.9	169.7	977.6
2026	60	773.8	--	41.4	815.2	95.1	910.3
2027	60	847.7	--	38.6	886.3	102.3	988.6
2028	60	963.2	--	39.4	1002.6	99.5	1102.1
2029	60	915.2	--	40.1	955.3	103.2	1058.5
2030	60	832.0	--	40.8	872.8	96.6	969.4
2031	60	856.9	--	42.1	899.0	101.2	1000.2
2032	60	950.4	--	44.1	994.5	107.8	1102.3
2033	60	1080.1	--	45.4	1125.5	113.7	1239.2
2034	60	1024.0	--	46.0	1070.0	88.2	1158.2
2035	60	933.4	--	46.6	980.0	83.2	1063.2
2036	60	950.5	--	47.5	998.0	89.3	1087.3
2037	60	1039.7	--	51.5	1091.2	95.6	1186.8
2038	60	1178.3	--	52.6	1230.9	112.3	1343.2
2039	60	1117.3	--	53.6	1170.9	96.2	1267.1
2040	60	1019.1	--	54.2	1073.3	69.5	1142.8
2041	60	1039.3	--	54.9	1094.2	3.0	1097.2
2042	60	1139.7	--	55.3	1195.0	--	1195.0
2043	60	1124.1	--	48.2	1172.3	--	1172.3
2044	33	601.0	--	30.8	631.8	--	631.8
Subtotal	1763	27355.2	--	1595.8	28951.0	3858.4	32809.4

Annual Funding - F-35 Engine 3010 | Procurement | Aircraft 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
2006	--	10.6	--	--	10.6	--	10.6
2007	2	50.2	--	7.3	57.5	29.2	86.7
2008	6	128.6	--	36.4	165.0	32.2	197.2
2009	7	130.3	--	65.6	195.9	34.2	230.1
2010	10	177.6	--	73.0	250.6	59.4	310.0
2011	22	348.2	--	90.3	438.5	134.6	573.1
2012	18	267.6	--	63.9	331.5	119.5	451.0
2013	19	252.4	--	11.4	263.8	86.3	350.1
2014	19	267.9	--	29.6	297.5	45.1	342.6
2015	28	362.0	--	14.5	376.5	110.7	487.2
2016	47	557.2	--	21.3	578.5	116.6	695.1
2017	48	579.8	--	1.0	580.8	269.6	850.4
2018	46	574.0	--	41.0	615.0	119.9	734.9
2019	48	510.1	--	33.3	543.4	122.7	666.1
2020	48	550.9	--	37.9	588.8	114.2	703.0
2021	54	602.3	--	25.5	627.8	149.2	777.0
2022	54	567.3	--	29.8	597.1	130.4	727.5
2023	54	625.6	--	20.5	646.1	125.5	771.6
2024	60	667.3	--	32.7	700.0	188.1	888.1
2025	60	592.7	--	32.2	624.9	131.2	756.1
2026	60	586.8	--	31.4	618.2	72.1	690.3
2027	60	630.2	--	28.7	658.9	76.1	735.0
2028	60	702.0	--	28.7	730.7	72.6	803.3
2029	60	654.0	--	28.7	682.7	73.7	756.4
2030	60	582.9	--	28.6	611.5	67.6	679.1
2031	60	588.5	--	28.9	617.4	69.6	687.0
2032	60	640.0	--	29.7	669.7	72.5	742.2
2033	60	713.0	--	30.0	743.0	75.1	818.1
2034	60	662.7	--	29.8	692.5	57.1	749.6
2035	60	592.3	--	29.6	621.9	52.7	674.6
2036	60	591.3	--	29.5	620.8	55.6	676.4
2037	60	634.1	--	31.4	665.5	58.3	723.8
2038	60	704.5	--	31.5	736.0	67.1	803.1
2039	60	655.0	--	31.4	686.4	56.4	742.8
2040	60	585.7	--	31.1	616.8	40.0	656.8
2041	60	585.6	--	30.9	616.5	1.7	618.2
2042	60	629.6	--	30.5	660.1	--	660.1
2043	60	608.8	--	26.1	634.9	--	634.9
2044	33	319.1	--	16.3	335.4	--	335.4
Subtotal	1763	19488.7	--	1220.0	20708.7	3086.8	23795.5

Cost Quantity Information - F-35 Engine 3010 | Procurement | Aircraft Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2006	--	--
2007	2	50.2
2008	6	128.6
2009	7	130.3
2010	10	177.6
2011	22	348.2
2012	18	267.6
2013	19	252.4
2014	19	267.9
2015	28	362.0
2016	47	557.2
2017	48	579.8
2018	46	574.0
2019	48	510.1
2020	48	550.9
2021	54	602.3
2022	54	567.3
2023	54	625.6
2024	60	667.3
2025	60	592.7
2026	60	586.8
2027	60	630.2
2028	60	702.0
2029	60	654.0
2030	60	582.9
2031	60	588.5
2032	60	640.0
2033	60	713.0
2034	60	662.7
2035	60	592.3
2036	60	591.3
2037	60	634.1
2038	60	704.5
2039	60	655.0
2040	60	585.7
2041	60	585.6
2042	60	629.6
2043	60	608.8
2044	33	329.7

Subtotal	1763	19488.7

Annual Funding - F-35 Engine 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	27.4	--	--	27.4	--	27.4
2008	6	246.1	--	1.3	247.4	1.2	248.6
2009	7	298.0	--	54.3	352.3	65.6	417.9
2010	20	599.0	--	118.5	717.5	127.6	845.1
2011	10	400.5	--	112.5	513.0	122.3	635.3
2012	13	191.4	--	57.7	249.1	62.0	311.1
2013	10	236.9	--	26.6	263.5	169.8	433.3
2014	10	227.1	--	21.6	248.7	142.4	391.1
2015	10	259.5	--	38.0	297.5	68.0	365.5
2016	21	362.7	--	22.3	385.0	109.9	494.9
2017	26	648.5	--	19.8	668.3	233.5	901.8
2018	24	704.2	--	26.1	730.3	102.5	832.8
2019	29	650.9	--	74.5	725.4	146.6	872.0
2020	36	765.6	--	66.9	832.5	103.3	935.8
2021	44	929.5	--	67.8	997.3	95.0	1092.3
2022	44	957.1	--	76.6	1033.7	104.6	1138.3
2023	45	998.8	--	80.6	1079.4	97.5	1176.9
2024	45	1022.2	--	99.0	1121.2	144.7	1265.9
2025	45	928.0	--	93.4	1021.4	105.4	1126.8
2026	45	935.9	--	96.0	1031.9	85.3	1117.2
2027	45	1023.2	--	67.4	1090.6	94.7	1185.3
2028	45	1093.7	--	63.7	1157.4	74.4	1231.8
2029	45	1054.8	--	67.7	1122.5	43.0	1165.5
2030	41	834.1	--	54.9	889.0	50.8	939.8
2031	24	319.0	--	122.0	441.0	89.6	530.6
2032	3	42.6	--	91.4	134.0	54.6	188.6
Subtotal	693	15756.7	--	1620.6	17377.3	2494.3	19871.6

Annual Funding - F-35 Engine 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	28.9	--	--	28.9	--	28.9
2008	6	256.1	--	1.4	257.5	1.2	258.7
2009	7	305.8	--	55.8	361.6	67.3	428.9
2010	20	602.1	--	119.2	721.3	128.2	849.5
2011	10	394.8	--	110.8	505.6	120.6	626.2
2012	13	186.0	--	56.1	242.1	60.3	302.4
2013	10	227.8	--	25.6	253.4	163.3	416.7
2014	10	215.7	--	20.5	236.2	135.2	371.4
2015	10	242.9	--	35.6	278.5	63.6	342.1
2016	21	333.5	--	20.5	354.0	101.0	455.0
2017	26	586.1	--	17.9	604.0	211.1	815.1
2018	24	625.1	--	23.2	648.3	91.0	739.3
2019	29	566.9	--	64.9	631.8	127.7	759.5
2020	36	653.8	--	57.2	711.0	88.2	799.2
2021	44	778.2	--	56.7	834.9	79.6	914.5
2022	44	785.6	--	62.9	848.5	85.8	934.3
2023	45	803.8	--	64.9	868.7	78.4	947.1
2024	45	806.5	--	78.1	884.6	114.1	998.7
2025	45	717.8	--	72.2	790.0	81.5	871.5
2026	45	709.7	--	72.8	782.5	64.7	847.2
2027	45	760.7	--	50.1	810.8	70.4	881.2
2028	45	797.2	--	46.4	843.6	54.2	897.8
2029	45	753.7	--	48.4	802.1	30.7	832.8
2030	41	584.3	--	38.5	622.8	35.6	658.4
2031	24	219.1	--	83.8	302.9	61.5	364.4
2032	3	28.7	--	61.5	90.2	36.8	127.0
Subtotal	693	12970.8	--	1345.0	14315.8	2152.0	16467.8

Cost Quantity Information - F-35 Engine 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2007	--	--
2008	6	256.1
2009	7	305.8
2010	20	602.1
2011	10	394.8
2012	13	186.0
2013	10	227.8
2014	10	215.7
2015	10	242.9
2016	21	333.5
2017	26	586.1
2018	24	625.1
2019	29	566.9
2020	36	653.8
2021	44	778.2
2022	44	785.6
2023	45	803.8
2024	45	806.5
2025	45	717.8
2026	45	709.7
2027	45	760.7
2028	45	797.2
2029	45	753.7
2030	41	584.3
2031	24	219.1
2032	3	57.6
Subtotal	693	12970.8

Low Rate Initial Production

F-35 Aircraft

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/26/2001	5/23/2015
Approved Quantity	465	518
Reference	Milestone B ADM	LRIP Approval ADM
Start Year	2006	2006
End Year	2015	2019

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the necessity to prevent a break in production and to ramp up to FRP.

F-35 Engine

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/26/2001	5/23/2015
Approved Quantity	465	518
Reference	Milestone B ADM	LRIP Approval ADM
Start Year	2006	2006
End Year	2015	2019

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the necessity to prevent a break in production and to ramp up to FRP.

Foreign Military Sales

F-35 Aircraft

Country	Date of Sale	Quantity	Total Cost $M	Description
Japan	9/14/2015	28	5277.7	Japan signed Amendment # 5 on 19 October 2017. This amendment added 6 F-35A's, Japan has option to purchase 14 additional F-35A aircraft.
Israel	2/15/2015	50	7800.3	Israel signed Letter of Offer and Acceptance Amendment on 25 August 2017 to exercise their option to purchase an additional 17 F-35A aircraft, bringing planned fleet total to 50 F-35A aircraft.
Korea	9/14/2014	40	6277.0	All 40 aircraft will be the F-35A aircraft.

Notes

F-35 Engine

Notes

FMS information for the F-35 Engine subprogram are reflected in the F-35 Aircraft subprogram.

Nuclear Costs

F-35 Aircraft

None

F-35 Engine

None

Unit Cost

F-35 Aircraft

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Current UCR Baseline (Jun 2014 APB)	BY 2012 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	274958.4	271715.6	
Quantity	2457	2470	
Unit Cost	111.908	110.006	-1.70
Average Procurement Unit Cost			
Cost	224332.9	220601.2	
Quantity	2443	2456	
Unit Cost	91.827	89.821	-2.18

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Revised Original UCR Baseline (Mar 2012 APB)	BY 2012 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	276482.2	271715.6	
Quantity	2458	2470	
Unit Cost	112.483	110.006	-2.20
Average Procurement Unit Cost			
Cost	224333.7	220601.2	
Quantity	2443	2456	
Unit Cost	91.827	89.821	-2.18

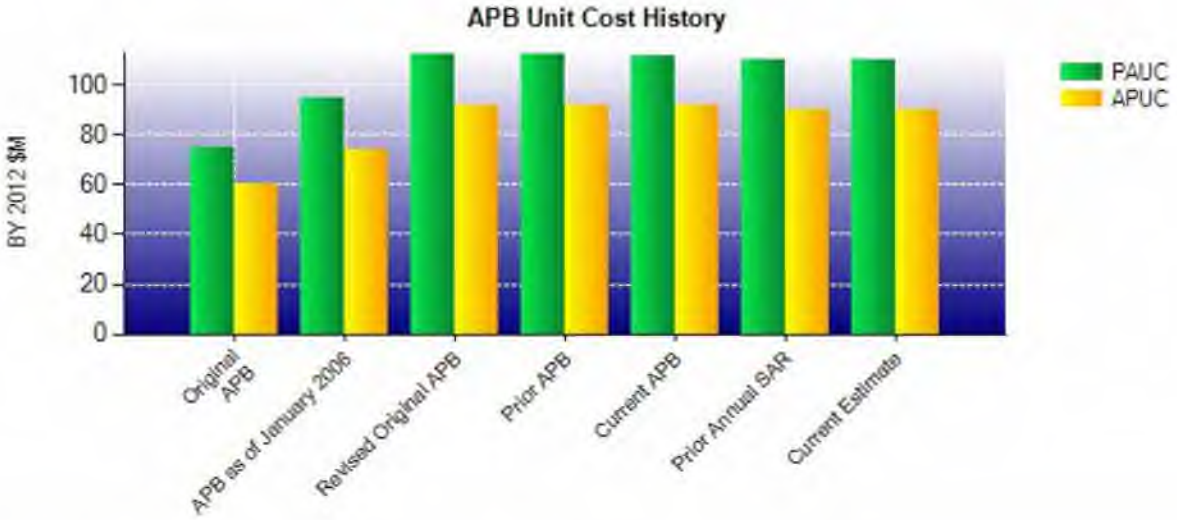
The DoD average F-35 Aircraft Unit Recurring Flyaway (URF) Cost consists of the Hardware (Airframe, Vehicle Systems, Mission Systems, and Engineering Change Order) costs over the life of the program. The URF assumes the quantity benefits of 132 FMS aircraft and 609 International Partner aircraft.

The current estimate for F-35 total procurement quantity increase from 2443 to 2456 has not changed from SAR 2016 to SAR 2017. This increase was the result of two changes: a USMC variant mixture change between the F-35B and F-35C (13 additional F-35Bs and 13 less F-35Cs), and the Department of Navy (DoN) decision to continue to procure a total of 340 F-35C aircraft. This results in a net increase of 13 F-35B aircraft. The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the DoN Aircraft Procurement accounts. The USMC validated their requirement through the Marine Corps Requirements Oversight Council (MROC).

F-35A (Conventional Take Off and Landing) URF - $67.6M (BY 2012)

F-35B (Short Takeoff and Vertical Landing) URF - $77.4M (BY 2012)

F-35C (Carrier Variant) URF - $78.7M (BY 2012)



APB Unit Cost History					
Item	Date	BY 2012 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 2001	74.567	60.632	81.298	68.934
APB as of January 2006	Mar 2004	94.837	73.845	100.407	81.826
Revised Original APB	Mar 2012	112.529	91.827	135.065	115.697
Prior APB	Mar 2012	112.529	91.827	135.065	115.697
Current APB	Jun 2014	111.908	91.827	134.638	115.697
Prior Annual SAR	Dec 2016	109.950	89.926	138.495	119.608
Current Estimate	Dec 2017	110.006	89.821	138.256	119.189

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
135.065	-0.146	-0.223	8.459	1.060	-3.225	0.000	-2.734	3.191	138.256

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
115.697	-0.145	-0.121	8.507	1.061	-3.061	0.000	-2.749	3.492	119.189

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	Nov 1996	N/A	Nov 1996
Milestone B	Mar 2001	Mar 2012	N/A	Mar 2012
Milestone C	TBD	Apr 2019	N/A	Apr 2019
IOC	TBD	TBD	N/A	Jul 2015
Total Cost (TY $M)	24800.0	331855.2	N/A	341492.3
Total Quantity	N/A	2457	N/A	2470
PAUC	N/A	135.065	N/A	138.256

The Service IOC reflected in the above table is the U.S. Marine Corps Objective date. In addition, the U.S. Air Force IOC objective date was August 2016, and the U.S. Navy IOC objective date is August 2018.

F-35 Engine

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Current UCR Baseline (Jun 2014 APB)	BY 2012 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	55273.5	53380.2	
Quantity	2457	2470	
Unit Cost	22.496	21.611	-3.93
Average Procurement Unit Cost			
Cost	42332.9	40263.3	
Quantity	2443	2456	
Unit Cost	17.328	16.394	-5.39

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Original UCR Baseline (Mar 2012 APB)	BY 2012 $M Current Estimate (Dec 2017 SAR)	% Change
Program Acquisition Unit Cost			
Cost	53916.4	53380.2	
Quantity	2458	2470	
Unit Cost	21.935	21.611	-1.48
Average Procurement Unit Cost			
Cost	42332.9	40263.3	
Quantity	2443	2456	
Unit Cost	17.328	16.394	-5.39

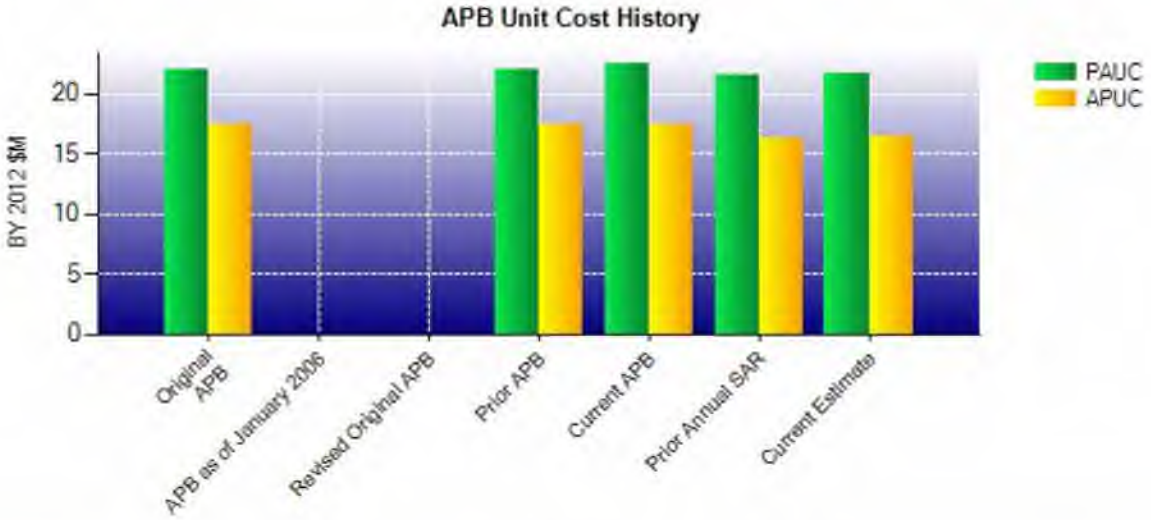
The DoD average F-35 Engine Unit Recurring Flyaway (URF) Cost consists of the Hardware (Propulsion and Engineering Change Order) costs over the life of the program. The URF assumes the quantity benefits of 132 FMS engines and 609 International Partner engines.

The current estimate for F-35 total procurement quantity increase from 2443 to 2456 has not changed from SAR 2016 to SAR 2017. This increase was the result of two changes: a USMC variant mixture change between the F-35B and F-35C (13 additional F-35Bs and 13 less F-35Cs), and the Department of Navy (DoN) decision to continue to procure a total of 340 F-35C aircraft. This results in a net increase of 13 F-35B aircraft. The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the DoN Aircraft Procurement accounts. The USMC validated their requirement through the Marine Corps Requirements Oversight Council (MROC).

F-35A (Conventional Take Off and Landing) URF - $10.9M (BY 2012)

F-35B (Short Takeoff and Vertical Landing) URF - $26.8M (BY 2012)

F-35C (Carrier Variant) URF - $11.1M (BY 2012)



APB Unit Cost History					
Item	Date	BY 2012 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Mar 2012	21.989	17.328	25.990	21.708
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Mar 2012	21.989	17.328	25.990	21.708
Current APB	Jun 2014	22.496	17.328	26.396	21.708
Prior Annual SAR	Dec 2016	21.475	16.253	26.072	21.349
Current Estimate	Dec 2017	21.611	16.394	26.170	21.450

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
25.990	-0.041	-0.048	0.983	0.000	0.206	0.000	-0.920	0.180	26.170

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
21.708	-0.048	-0.025	0.988	0.000	-0.248	0.000	-0.925	-0.258	21.450

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	N/A	N/A
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost (TY $M)	N/A	63856.6	N/A	64638.7
Total Quantity	N/A	2457	N/A	2470
PAUC	N/A	25.990	N/A	26.170

Cost Variance

F-35 Aircraft

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	44410.1	282647.8	4797.3	331855.2
Previous Changes				
Economic	-9.6	+1206.9	+43.3	+1240.6
Quantity	--	+1204.0	--	+1204.0
Schedule	--	+21434.4	--	+21434.4
Engineering	--	+2606.6	--	+2606.6
Estimating	-870.2	-8831.8	-47.2	-9749.2
Other	--	--	--	--
Support	--	-6509.7	--	-6509.7
Subtotal	-879.8	+11110.4	-3.9	+10226.7
Current Changes				
Economic	-9.5	-1562.3	-29.2	-1601.0
Quantity	--	--	--	--
Schedule	--	-541.0	--	-541.0
Engineering	+11.7	--	--	+11.7
Estimating	-25.8	+1314.4	+494.4	+1783.0
Other	--	--	--	--
Support	--	-242.3	--	-242.3
Subtotal	-23.6	-1031.2	+465.2	-589.6
Total Changes	-903.4	+10079.2	+461.3	+9637.1
CE - Cost Variance	43506.7	292727.0	5258.6	341492.3
CE - Cost & Funding	43506.7	292727.0	5258.6	341492.3

Summary BY 2012 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	47982.1	224332.9	4168.0	276483.0
Previous Changes				
Economic	--	--	--	--
Quantity	--	+817.9	--	+817.9
Schedule	--	+6387.1	--	+6387.1
Engineering	--	+1922.0	--	+1922.0
Estimating	-1296.5	-7091.6	-133.9	-8522.0
Other	--	--	--	--
Support	--	-5510.6	--	-5510.6
Subtotal	-1296.5	-3475.2	-133.9	-4905.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-704.0	--	-704.0
Engineering	+10.3	--	--	+10.3
Estimating	-22.8	+939.7	+407.2	+1324.1
Other	--	--	--	--
Support	--	-492.2	--	-492.2
Subtotal	-12.5	-256.5	+407.2	+138.2
Total Changes	-1309.0	-3731.7	+273.3	-4767.4
CE - Cost Variance	46673.1	220601.2	4441.3	271715.6
CE - Cost & Funding	46673.1	220601.2	4441.3	271715.6

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-9.5
Additional funding for the Air Vehicle program (Navy - F-35B Full Motion Video). (Engineering)	+10.3	+11.7
Adjustment for current and prior escalation. (Estimating)	+7.4	+7.9
Realignment of cost between the Aircraft subprogram and Engine subprogram (Air Force). (Estimating)	-11.5	-12.8
Realignment of cost between the Aircraft subprogram and the Engine subprogram (Navy). (Estimating)	-6.3	-7.2
Revised estimate for Small Business Innovation Research (SBIR) in FY 2017 (Navy). (Estimating)	-12.6	-13.8
Revised estimate due to application of new outyear inflation indices (Navy). (Estimating)	+1.5	+1.5
Revise estimate due to application of new outyear inflation indices (Air Force). (Estimating)	-1.3	-1.4
RDT&E Subtotal	-12.5	-23.6

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-1562.3
Stretch-out of procurement buy profile in FY 2023 to FY 2044 (Aircraft Procurement, Air Force (APAF)). (Schedule)	0.0	+247.3
Additional schedule variance for U.S. procurement quantity profile adjustments (APAF). (Schedule)	-187.4	-184.3
Stretch-out of procurement buy profile in FY 2021 to FY 2032 (Aircraft Procurement, Navy (APN)). (Schedule)	0.0	+30.9
Additional schedule variance for U.S. procurement quantity profile adjustments (APN). (Schedule)	-516.6	-634.9
Adjustment for current and prior escalation. (Estimating)	+79.2	+87.2
Revised estimate to reflect the application of new outyear escalation indices (APAF). (Estimating)	+498.7	+729.5
Revised estimate to reflect the application of new outyear escalation indices (APN). (Estimating)	+230.4	+291.4
Additional funding due to revised estimating assumptions (APN). (Estimating)	+311.5	+393.3
Revised estimate of non-recurring costs due to changes in other support (APAF). (Estimating)	+6.3	+15.5
Revised estimate of non-recurring costs due to revised estimating assumptions and changes in other support (APN). (Estimating)	+6.0	+6.8
Update for fact of life changes for prior years/lots FY 2006-2018 (APAF). (Estimating)	-126.4	-136.9
Update for fact of life changes for prior years/lots FY 2006-2018 (APN). (Estimating)	-66.0	-72.4
Adjustment for current and prior escalation. (Support)	+14.2	+15.8
Increase in Other Support due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (APAF). (Support)	+147.5	+400.0
Decrease in Initial Spares due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (APAF). (Support)	-121.5	+4.2
Decrease in Other Support due to maturation of technical baseline, definition of customer	-317.4	-376.0

requirements, and further definition of Service beddown plans (APN). (Support)		
Decrease in Initial Spares due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (APN). (Support)	-215.0	-286.3
Procurement Subtotal	-256.5	-1031.2

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-29.2
Adjustment for current and prior escalation. (Estimating)	+7.1	+7.8
Revised estimate as a result of refined requirements (Navy). (Estimating)	+219.1	+268.9
Revised estimate as a result of refined requirements (Air Force). (Estimating)	+169.9	+202.5
Revised estimate due to application of outyear inflation indices (Air Force). (Estimating)	+5.6	+7.8
Revised estimate due to application of outyear inflation indicies (Navy). (Estimating)	+5.5	+7.4
MILCON Subtotal	+407.2	+465.2

Cost Variance

F-35 Engine

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	10823.7	53032.9	--	63856.6
Previous Changes				
Economic	+16.6	+188.9	--	+205.5
Quantity	--	+221.3	--	+221.3
Schedule	--	+2374.4	--	+2374.4
Engineering	--	--	--	--
Estimating	+1126.5	-977.2	--	+149.3
Other	--	--	--	--
Support	--	-2408.1	--	-2408.1
Subtotal	+1143.1	-600.7	--	+542.4
Current Changes				
Economic	-0.6	-307.3	--	-307.9
Quantity	--	--	--	--
Schedule	--	+53.1	--	+53.1
Engineering	--	--	--	--
Estimating	-8.5	+367.2	--	+358.7
Other	--	--	--	--
Support	--	+135.8	--	+135.8
Subtotal	-9.1	+248.8	--	+239.7
Total Changes	+1134.0	-351.9	--	+782.1
CE - Cost Variance	11957.7	52681.0	--	64638.7
CE - Cost & Funding	11957.7	52681.0	--	64638.7

Summary BY 2012 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	11695.2	42332.9	--	54028.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	+150.3	--	+150.3
Schedule	--	+266.3	--	+266.3
Engineering	--	--	--	--
Estimating	+1429.9	-1003.0	--	+426.9
Other	--	--	--	--
Support	--	-1828.4	--	-1828.4
Subtotal	+1429.9	-2414.8	--	-984.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+8.1	--	+8.1
Engineering	--	--	--	--
Estimating	-8.2	+273.2	--	+265.0
Other	--	--	--	--
Support	--	+63.9	--	+63.9
Subtotal	-8.2	+345.2	--	+337.0
Total Changes	+1421.7	-2069.6	--	-647.9
CE - Cost Variance	13116.9	40263.3	--	53380.2
CE - Cost & Funding	13116.9	40263.3	--	53380.2

Previous Estimate: December 2016

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.6
Realignment of cost between the Aircraft subprogram and Engine subprogram (Air Force). (Estimating)	+11.5	+12.8
Adjustment for current and prior escalation. (Estimating)	+0.6	+0.6
Realignment of cost between the Aircraft subprogram and the Engine subprogram (Navy). (Estimating) (Estimating)	+6.3	+7.2
Revised estimate for SBIR in FY 2017 (Navy). (Estimating)	-11.4	-12.5
Revised estimate for SBIR in FY 2017 (AF). (Estimating)	-15.2	-16.6
RDT&E Subtotal	-8.2	-9.1

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-307.3
Stretch-out of procurement buy profile in FY 2023 to FY 2044 (Engine Procurement, Air Force (EPAF)). (Schedule)	0.0	+43.8
Additional schedule variance for U.S. procurement quantity profile adjustments (EPAF). (Schedule)	-66.7	-83.1
Stretch-out of procurement buy profile in FY 2021 to FY 2032 (Engine Procurement, Navy (EPN)). (Schedule)	0.0	+5.3
Additional schedule variance for U.S. procurement quantity profile adjustments (EPN). (Schedule)	+74.8	+87.1
Adjustment for current and prior escalation. (Estimating)	+14.6	+16.4
Revised estimate to reflect the application of new outyear escalation indices (EPAF). (Estimating)	+145.5	+204.4
Revised estimate to reflect the application of new outyear escalation indices (EPN). (Estimating)	+73.4	+92.8
Additional funding due to revised estimating assumptions (EPN). (Estimating)	+50.3	+64.7
Revised estimate of non-recurring costs due to changes in other support (EPAF). (Estimating)	+0.5	+1.4
Revised estimate of non-recurring costs due to revised estimating assumptions and changes in other support (EPN). (Estimating)	+1.7	+2.0
Update for fact of life changes for prior years/lots 2006-2018 (EPAF). (Estimating)	-7.4	-8.2
Update for fact of life changes for prior years/lots 2006-2018 (EPN). (Estimating)	-5.4	-6.3
Adjustment for current and prior escalation. (Support)	+3.2	+3.3
Increase in Other Support due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (EPAF). (Support)	+133.9	+174.5
Decrease in Initial Spares due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (EPAF). (Support)	-30.5	+28.7
Increase in Other Support due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (EPN). (Support)	+49.1	+51.7
Decrease in Initial Spares due to maturation of technical baseline, definition of customer requirements, and further definition of Service beddown plans (EPN). (Support)	-91.8	-122.4

Procurement Subtotal	+345.2	+248.8

Contracts

General Notes

The FY 2015 Annualized Sustainment contract no longer meets the threshold for the six largest contracts.

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 9
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
Fort Worth, TX 76101
Contract Number: N00019-14-C-0002
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: July 29, 2013
Definitization Date: November 02, 2016

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
738.0	N/A	57	7040.4	N/A	57	7030.4	7030.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the LRIP 9 Production effort. Initial Contract Price consisted primarily of Long Lead material and Production Non-Recurring Tooling. The difference between the previous SAR Target Price and the Current Target price is driven by increased scope awarded for Blueprint for Affordability tasks and definitization of the Italy aircraft.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	-52.0	-141.0
Previous Cumulative Variances	-51.0	-118.0
Net Change	-1.0	-23.0

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the correction of data errors associated with affordability tasks and Mission Systems hardware.

The unfavorable net change in the schedule variance is due to schedule recovery for Radar subsystems and Mission Systems tooling.

Notes

As a whole, the CLIN consist of multiple contract types including Fixed Price Incentive Fee as well as Cost Plus Incentive Fee and Cost Plus Fixed-Fee. For this reason, the overall contract type is mixed and there is not a true contract ceiling.

The first Undefinitized Contract Action Integrated Program Management Report submittal was received in month-end May 2016. To date, 57 of 57 aircraft have been delivered as of December 2017.

Contract Award Date updated from SAR 2016 due to data entry error.

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 10
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
Fort Worth, TX 76101
Contract Number: N00019-15-C-0003
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF)
Award Date: February 28, 2013
Definitization Date: June 01, 2017

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
25.4	N/A	94	8781.4	N/A	94	9065.2	8781.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the LRIP 10 Production effort. Initial Contract Price consisted primarily of Long Lead material.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	-114.0	+5.0
Previous Cumulative Variances	--	--
Net Change	-114.0	+5.0

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to assembly labor due to higher than anticipated volumes of out of station work, part shortages, and inefficiencies associated with the influx of new employees and the associated learning curve.

The favorable cumulative schedule variance is due to high dollar production parts issuing to the aircraft ahead of schedule.

Notes

This is the first time this contract is being reported.

Overall, the LRIP 10 contract is tracking slighlty behind schedule with 25 of 94 aircraft currently projected to miss their contractual DD250 dates.

Contract Identification

Appropriation: Procurement
Contract Name: F135 LRIP 9
Contractor: Pratt & Whitney
Contractor Location: 400 Aircraft Road
Middletown, CT 06457
Contract Number: N00019-14-C-0004
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: May 02, 2014
Definitization Date: October 30, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
466.7	469.5	67	1542.6	1542.6	67	1519.9	1437.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the production effort and Non-recurring Sustainment work scope. Initial Contract Price consisted primarily of Long Lead material, unique non-recurring depot activation and initial common depot spares.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	-137.0	-59.0
Previous Cumulative Variances	--	--
Net Change	-137.0	-59.0

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to engine hardware costing more than planned due to delays with the incorporating enough affordability initiatives to lower the manufacturing costs. Additionally, a retroactive 2017 General and Administrative unfavorable rate increase was implemented.

The unfavorable cumulative schedule variance is due to spare power and fan modules delivery delays; and delays with initial Depot Activation for the Netherlands, Turkey and Norway. Additionally, the United States depot activation is late due to the Eddy Current Inspection development work.

Notes

This is the first time this contract is being reported.

To date, 67 out 67 engines are delivered.

Contract Identification

Appropriation: Procurement
Contract Name: F135 LRIP 10
Contractor: Pratt & Whitney
Contractor Location: 400 Aircraft Road
Middletown, CT 06457
Contract Number: N00019-15-C-0004
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: April 30, 2015
Definitization Date: November 25, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
370.6	377.3	104	2215.1	2261.4	104	2207.0	2215.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the production effort and Sustainment work scope.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	-163.0	-137.0
Previous Cumulative Variances	-43.0	-51.0
Net Change	-120.0	-86.0

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the engine hardware costing more than planned due delays with the incorporating enough affordability initiatives to lower the manufacturing costs. Additionally, a retroactive 2017 General and Administrative unfavorable rate increase was implemented.

The unfavorable net change in the schedule variance is due to engine hardware late to the baseline plan due to the complexity in manufacturing of parts, coating delays with the Nozzle flaps and hardware being re-allocated to a higher priority. Additionally, depot activation training assets are late.

Notes

As a whole, the CLIN consist of multiple contract types including Fixed Price Incentive Fee as well as Cost Plus Incentive Fee and Cost Plus Fixed-Fee. For this reason, the overall contract type is mixed and there is not a true contract ceiling.

To date, 37 out 104 engines are delivered.

Contract award date updated from SAR 2016 due to data entry error.

The LRIP 10 engine quantity changing from 102 in SAR 2016 to 104 in SAR 2017 was due to a contract modification in June 2017 that added two Italian engines.

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 9 Sustainment
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
Ft. Worth, TX 76108
Contract Number: N00019-15-C-0114
Contract Type: Cost Plus Incentive Fee (CPIF), Fixed Price Incentive(Firm Target) (FPIF)
Award Date: November 04, 2015
Definitization Date: November 04, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
431.3	N/A	N/A	1519.8	N/A	N/A	1384.3	1519.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of FY 2016 Annualized Sustainment effort.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	+78.0	-66.0
Previous Cumulative Variances	--	--
Net Change	+78.0	-66.0

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to staffing underruns within LM RMS and Program Management; and also due to executing and managing multiple sustainment contracts concurrently (improved efficiency/productivity and more favorable bulk pricing).

The unfavorable cumulative schedule variance is due to late deliveries of repairs, replenishments, and consumables; additionally there have been delayed deliveries of training devices and support equipment.

Notes

This is the first time this contract is being reported.

The contract appropriations include Procurement and O&M.

Contract Identification

Appropriation: Procurement
Contract Name: FY17 Annualized Sustainment
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
Ft. Worth, TX 76108
Contract Number: N00019-17-C-0045
Contract Type: Cost Plus Incentive Fee (CPIF), Cost Plus Award Fee (CPAF)
Award Date: February 28, 2017
Definitization Date: May 03, 2017

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1049.9	N/A	N/A	1322.0	N/A	N/A	1255.5	1322.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the Initial Contract Price was for the 10-month base period (March thru December 2017); the Current Contract Price increase is driven by the executed Option for two additional months (January to February 2018).

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2017)	+38.0	-34.0
Previous Cumulative Variances	--	--
Net Change	+38.0	-34.0

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to delayed staffing, deferred hiring, labor rate underruns, and increased efficiencies.

The unfavorable cumulative schedule variance is due to repair and replenishment order materials being delivered late to the baselined Purchase Order delivery dates; repairs are increasing in complexity and repair parts have significant lead time since funded lay-in material is not readily available.

Notes

This is the first time this contract is being reported.

The contract appropriation includes Procurement and O&M.

Deliveries and Expenditures

F-35 Aircraft

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	14	14	14	100.00%
Production	213	212	2456	8.63%
Total Program Quantity Delivered	227	226	2470	9.15%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	341492.3	Years Appropriated	25
Expended to Date	80136.6	Percent Years Appropriated	49.02%
Percent Expended	23.47%	Appropriated to Date	109516.6
Total Funding Years	51	Percent Appropriated	32.07%

The above data is current as of February 12, 2018.

Totals reflect U.S. aircraft only-no International Partner aircraft.

F-35 Engine

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	14	14	14	100.00%
Production	213	212	2456	8.63%
Total Program Quantity Delivered	227	226	2470	9.15%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	64638.7	Years Appropriated	25
Expended to Date	19752.8	Percent Years Appropriated	49.02%
Percent Expended	30.56%	Appropriated to Date	23491.9
Total Funding Years	51	Percent Appropriated	36.34%

The above data is current as of February 12, 2018.

Engines planned and actual to date only include production installs.

Operating and Support Cost

F-35 Aircraft

Cost Estimate Details

Date of Estimate:	March 07, 2016
Source of Estimate:	CAPE ICE
Quantity to Sustain:	2443
Unit of Measure:	Flying Hour
Service Life per Unit:	30.00 Years
Fiscal Years in Service:	FY 2011 - FY 2070

The 14 developmental aircraft will not be sustained. The CAPE ICE does not include the 13 US Marine Corps F-35B aircraft added in the FY 2018 PB.

Sustainment Strategy

The F-35 Product Support Manager (PSM) has developed and is executing a Sustainment Strategy that is consistent with warfighter requirements, technical specifications, extant contracts, government policies, and best practices. The F-35 Sustainment Strategy expressly states that the F-35 Program will:

- Design, develop, deliver and sustain a single, integrated, and global system of sustainment products, processes, and business practices. These actions will enable the F-35 Air System to achieve a high degree of effectiveness at an affordable cost.

- Tailor the global system to meet warfighter-defined and PSM-supported readiness and cost objectives. This action will ensure that the global system is responsive and flexible as operational needs vary over time.

- Maintain life-cycle focus, including the reduction of costs. This action will provide critical affordability benefits and further supports a high degree of effectiveness as Air System maturity grows.

- Create a mutually-beneficial enterprise that – with relevant metrics and incentives – operates, manages, and supports the global system. This action further improves responsiveness and enhances affordability.

- Leverage the global resource base – government and commercial – to take advantage of stakeholder capabilities, human capital, best practices, and similar critical contributions. This action increases robustness and scalability as the F-35 fleet grows and matures.

Antecedent Information

The F-35 family of aircraft variants will replace the following current aircraft: F-16C/D, A-10, F/A-18C/D, and AV-8B. The F-35 O&S estimate is based on legacy fleet history only when F-35 specific data is not available.

Comparing the costs of the 5th Generation F-35 to legacy aircraft is challenging. The cost table compares an adjusted F-16C/D Cost per Flying Hour (CPFH) to a forecast of the CPFH for the F-35A variant. The F-35A CPFH figure is based on the Conventional Takeoff and Landing (CTOL) variant only. The F-35A CTOL variant will make up the majority of the DoD F-35 aircraft procurement, accounting for 1,763 of 2,456 total aircraft currently planned for U.S. forces.

The F-16C/D CPFH figures were developed in a joint effort between CAPE and the Air Force Cost Analysis Agency. The

figures have been normalized for comparison to the F-35A CPFH forecast. The starting point for the F-16C/D CPFH is an average of actual cost incurred for this fleet during FY 2008 through FY 2010. In order to enable the direct comparison of the CPFH figures, the actual F-16C/D CPFH is adjusted to reflect the cost of fuel, the number of flight hours forecast for the F-35A, and FY 2013 inflation indices. The F-16C/D figures include costs that F-16 shares with other Air Force platforms: Systems Engineering/Program Management (SEPM), maintenance training costs, certain software development efforts, and information systems. Costs for mission planning are included in the F-35A CPFH figure, but equivalent costs for the F-16C/D are not available, and no adjustment was made for this element of cost. Finally, the F-16C/D figures assume full funding of requirements consistent with the F-35A CPFH figures.

Annual O&S Costs BY2012 $K		
Cost Element	**F-35 Aircraft Average Annual Cost Per Flying Hour**	**F-16C/D (Antecedent) Cost Per Flying Hour ($)**
Unit-Level Manpower	8.000	10.000
Unit Operations	5.000	6.000
Maintenance	11.000	6.000
Sustaining Support	3.000	2.000
Continuing System Improvements	2.000	2.000
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	29.000	26.000

The F-35 CAPE ICE is unchanged from the December 2015 SAR.

Given the significant increase in military capabilities provided, it is reasonable to expect F-35A to cost more to operate and sustain than 4th generation legacy aircraft.

Item	Total O&S Cost $M			
	F-35 Aircraft			F-16C/D (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	617000.0	678700.0	620805.4	N/A
Then Year	1113272.6	N/A	1123844.0	N/A

The Total O&S Cost figures reflect the CAPE ICE. The O&S cost estimate includes all three U.S. aircraft variants, is based on a forecast 30-year service-life, and is based on planned usage rates provided by each relevant military service. The planned F-35 usage rates, in terms of aircraft flight hours per year, are as follows: F-35A @ 250 hrs./yr.; F-35B @ 302 hrs./yr.; and F-35C @ 316 hrs./yr. The O&S cost estimate is not a simple extrapolation of the F-35A flying hour cost shown in the unitized O&S cost table. The CAPE ICE uses FY 2015 inflation indices, and includes revised forecasts of labor escalation rates for military, civilian, and contractor personnel. A comparable total cost figure for the antecedent system (i.e., F-16C/D) is not available.

In PB19, the Department of the Navy (DoN) funded the development and implementation of intermediate level (I-Level) repair capabilities and therefore changed the program of record (POR). The CAPE ICE currently does not include I-Level maintenance costs for the DoN. However, once the concept of operations is codified by the program office, CAPE will quantify the associated costs and/or savings in a future update of the ICE.

The CAPE ICE O&S cost estimate incorporates actual information on component reliabilities obtained from the ongoing F-35 flight operations, including flight test and field operations. This program information is provided from the DoD test community, through Director, Operational Test and Evaluation, and includes actual reliability information on many F-35 components based on data collected during approximately 31,000 hours of flight operations. The data include all variants and flight operations through May 2015.

The reliability information has been compared to expected reliabilities for this stage of the program, for all variants, based on reliability growth curves. The CAPE ICE O&S estimate continues to reflect the increased Depot Level Repair (DLR) costs present in the 2014 SAR estimate, because component reliability information obtained from actual flight operations data remains inconsistent with expectations.

CAPE will continue to work with the DoD operational test community to improve the processes and methods used to incorporate actual data and information on component reliabilities and removal rates, obtained from ongoing flight operations, into the CAPE life-cycle O&S cost estimate for the F-35 program. This information will be used, together with reliability improvement forecasts, to update the O&S cost estimates as the program proceeds to and beyond IOC. In the future, the use of actual flight operations information could result in substantial changes in forecasts of DLR costs in CAPE O&S estimates.

Affordability remains the F-35 program office number one priority. As such, the F-35 program team is focused on reducing sustainment costs across the program. The program continues to target O&S cost avoidance through the Affordability War Room (AWR) and Reliability and Maintainability Improvement Program (RMIP). Concurrent to AWR activity, the program office has taken strides to transition from analogy and parametric estimating approaches toward contracted values to improve the O&S cost estimate's accuracy. As a result of AWR affordability initiatives, requirement refinement, and improved cost data quality, the program has reduced the program's annual cost per flight hour.

The O&S Program Office Estimate (POE) is captured in the 2017 Annual Cost Estimate (ACE) of $604.0B BY 2012$ ($1.105 Trillion TY$) and has been updated to reflect the latest technical baseline for the program and incorporates revised stakeholder requirements. Primary updates to the 2017 POE were to service-defined programmatic requirements.

The CAPE estimate does not incorporate the program office updates to the 2016 or 2017 ACE. The program office does not support the CAPE's use of actual reliability data from ongoing flight operations. The reliability data used in the CAPE estimate is based on a mix of aircraft configurations and represent only 9% of the hours required to reach Reliability and Maintainability maturity of the F-35 fleet. The CAPE estimate accounted for the real price change of military personnel compensation. The program office does not have a position on military personnel real price change and will incorporate once it becomes DoD guidance.

The F-35 PEO believes that the inherent differences between the F-35 and the F-16 estimates, such as mission planning costs being included in F-35 but not F-16 and the fact that the F-16 is a mature weapons system with many reliability and maintenance costs "leaned out" over the years, result in an overstating of the differences in cost per flying hour between the two. Regardless of the difference, the F-35 program office is committed to, and has enacted multiple programs to drive the O&S costs of the F-35 down.

Annual O&S Costs BY2012 $K

Cost Element	**F-35 Aircraft**	**F-16C/D (Antecedent)**
Average Annual Cost Per Flying Hour (2017 JPO ACE)	**Cost Per Flying Hour ($)**	
Unit-Level Manpower	8.672	10.042
Unit Operations	6.108*	5.632

Maintenance	10.310	5.501
Sustaining Support	2.902	2.075
Continuing System Improvements	2.009	2.291
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	30.005	25.541

*The JPO and the CAPE use a different deflation methodology to convert costs into a BY2012$. This results in a significantly different BY2012 fuel cost per gallon and makes the Unit Operations Cost Per Flying Hour from the JPO ACE not comparable to the CAPE estimate or the Antecedent costs.

Equation to Translate Annual Cost to Total Cost

The F-35 steady state cost per flying hour reflected in the annual O&S cost section does not easily translate to the Total O&S value for the program because the total O&S costs reflect costs for all three variants of the F-35 for the U.S. Air Force, U.S. Marine Corps, and U.S. Navy, whereas the CPFH reflects the U.S. Air Force F-35A only.

O&S Cost Variance		
Category	**BY 2012 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2016 SAR	620805.4	
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	620805.4	

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

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

Program maturity is not at a point where disposal costs can be estimated within an acceptable margin of error.

F-35 Engine

Cost Estimate Details

Date of Estimate:

Source of Estimate:

Quantity to Sustain:

Unit of Measure:

Service Life per Unit:

Fiscal Years in Service:

O&S costs for the engine subprogram are included in the overall program costs that are shown in the F-35 Aircraft subprogram.

Sustainment Strategy

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Antecedent Information

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Annual O&S Costs BY2012 $K		
Cost Element	**F-35 Engine**	**No Antecedent (Antecedent)**
Unit-Level Manpower	0.000	0.000
Unit Operations	0.000	0.000
Maintenance	0.000	0.000
Sustaining Support	0.000	0.000
Continuing System Improvements	0.000	0.000
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	--	--

Item	Total O&S Cost $M			
	F-35 Engine			No Antecedent (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	N/A	N/A	N/A	N/A
Then Year	N/A	N/A	N/A	0.0

O&S Cost Variance		
Category	**BY 2012 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2016 SAR	0.0	

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	0.0

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

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