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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 2018 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

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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.

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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

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

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 F-35 remains the DoD's largest cooperative acquisition program, with eight International Partners participating with the U.S. under Memorandums of Understanding for System Development and Demonstration (SDD) and Production, Sustainment and Follow-on Development. Additionally, the program currently has three FMS customers. The F-35 program is executing well across the entire spectrum of acquisition, to include development and design, flight test, production, fielding and base stand-up, sustainment of fielded aircraft, and building a global sustainment enterprise.

The F-35 weapon system is now operational and forward deployed. The size of the fleet continues to grow and is rapidly expanding its capability. Program costs are well understood and are stable. With respect to production costs and operating costs that the program can influence; they are decreasing. The costs to complete the Development program still remain well within the budget established in 2011 after the Nunn-McCurdy Breach. The overall assessment is that the program is making solid progress as it grows and accelerates; and shows improvement as the program continues to manage emerging issues and mitigates program risks.

We are again pleased to report many accomplishments by the F-35 team during the past year but none are more satisfying than the declaration of IOC for the F-35A by the U.S. Air Force (USAF) last summer, and seeing the U.S. Marine Corps (USMC) forward deploy its F-35Bs. The F-35 fleet now exceeds 210 aircraft and it has surpassed 73,000 flight hours.

The Program's main focus areas include: Delivering the full Block 3F capabilities; completing development within the time and resources we have; smoothly transitioning from SDD to Follow-on-Modernization (FoM); completing the production ramp-up while continuing to improve quality and delivery schedule; continuing to grow the global sustainment enterprise and improving the fielded fleet's performance; and continuing to strengthen International partnerships and participation.

Development

Delivering Full Block 3F capabilities: Steady progress is being made toward delivery of full Block 3F warfighter capability and completion of the SDD program. Two important milestones are associated with the closeout of this phase of the program: completion of SDD flight test and the delivery of the full Block 3F capability. The Joint Program Office (JPO)/Industry team will continue SDD until the full Block 3F capability is delivered to the warfighter. Delivery of full 3F capability is projected to meet APB threshold dates for all 3 variants with the exception of F-35B which will be cleared to 1.3 Mach by the threshold date with expansion to 1.6 Mach by May 2018. Critical path for F-35B to 1.6 Mach is a structural integrity update and the air worthiness certification.

Steady progress is being made toward completion of the SDD program. With respect to completion of F-35 flight test, the original 2011 re-baseline Program of Record showed flight testing to end on October 31, 2017. The JPO has maintained that there are three to four months of risk to the completion date and current projection of the end of SDD flight test by February 2018.

As a result of extensive review of work remaining and risk to completion, DoD has directed the JPO to maintain the resources necessary to continue flight testing to May 2018, if necessary, to ensure delivery of the full Block 3F capability. The biggest risks to the timely completion of SDD flight testing include software stability, the discovery of any new software deficiencies, the time it takes to correct deficiencies, and the health of our Developmental Test (DT) fleet. The remaining cost to complete the F-35's \$55B development program is estimated to be \$2.3B; money which was already budgeted for the program. Should flight testing go beyond February 2018 to May 2018, the JPO has been directed to hold \$100M of FoM funding in FY 2018 to pay for this added flight testing. Use of this internal funding will result in no impact to any other DoD programs or the Services/DoD's budget requirements.

Initial Operational Test and Evaluation (IOT&E): A number of criteria are required to be met by the Director, Operational Test & Evaluation before IOT&E can begin. These include the release of the final Block 3F aircraft capability, the release of Autonomic Logistics Information System (ALIS) 3.0, the release of a verified and validated Mission Data File (MDF), the

readiness of 23 instrumented aircraft in a Block 3F production representative configuration, and functioning Air-to-Air Range Infrastructure 2 (AARI 2) capability on the test aircraft and ranges. Additionally, a verified, validated, and accredited F-35 simulator must be delivered approximately four months prior to completion of the 13-month long IOT&E program. This simulator requirement will be met by the Joint Simulation Environment located at Naval Air Station Patuxent River in Maryland.

It is likely that by February 2018, the field release of ALIS 3.0, the field release of a verified and validated MDF, and the modifications necessary to place all 23 aircraft into a production representative configuration will not be completed. However, a large subset of those entrance criteria to start IOT&E will be met by February 2018. DOT&E has agreed to execute certain pre-IOT&E events to the advantage of ship availabilities and seasonal weather conditions. Additionally, in cooperation with the JPO, DOT&E is assessing the feasibility to start IOT&E as soon as possible with less than all 23 Block 3F Operational Test (OT) jets; potentially as early as March-April 2018. This IOT&E start approach is desirable for many reasons: First, obtaining earlier feedback from the OT community will enable the JPO and Industry to make corrections and fixes sooner, providing better capabilities to the warfighter. Second, delaying IOT&E will result in higher costs because IOT&E support will have to continue longer than planned. The JPO estimates that a six-month delay in the start of IOT&E will cost an additional \$30M. Finally, since F-35s will be produced at over 100+ airplanes per year during IOT&E, the sooner deficiencies are discovered, the quicker they can be cut into production, saving the time and resources that would otherwise be needed to retrofit these jets if they were to be produced without the corrections.

Transition to FoM: The F-35 FoM program continues to move forward and execute the acquisition strategy for the Block 4 planning and systems engineering phase. FoM systems engineering has been less efficient than planned which coupled with previous funding reductions have required the JPO to begin an update of the program execution plan. The F-35 JPO will manage FoM as a continuation of the F-35 program with full transparency to the enterprise for reporting on cost, schedule and performance as if it were a new program. SAR 2016 RDT&E cost excludes FoM funding; F-35B/C Sustainment/Capability enhancements; F-35A Deployability and Suitability enhancements; and F-35A Dual Capable Aircraft enhancements. FoM costs will not be included in the SAR until modernization is properly baselined.

Production

In August of 2016, Lockheed Martin declared an issue with non-conforming insulation on the polyalphaolefin (PAO) cooling tubes in some F-35A wing fuel tanks. The subsequent investigation and repairs affected 42 production aircraft which resulted in delays for re-work, limiting the production delivery to 46 aircraft of the planned 53 aircraft in 2016. Of the 46 delivered aircraft, 40 aircraft were assembled in the Fort Worth, Texas, Final Assembly and Check Out (FACO) facility and six aircraft were from the Italian FACO in Cameri, Italy.

In 2017, the goal is to deliver a total of 66 aircraft, which includes carryover of the seven aircraft originally planned for delivery in 2016. Of those 66 aircraft, 61 aircraft will be delivered from the Fort Worth FACO, three aircraft from the Italian FACO, which includes its first "B" model produced, and the first 2 aircraft deliveries from the Japanese FACO in Nagoya, Japan.

The DoD intends on executing an F-35 Block Buy contracting strategy for F-35 International Partners and FMS customers for production Lot 12 (FY 2018), Lot 13 (FY 2019) and Lot 14 (FY 2020). This strategy gives the F-35 Partners and FMS customers the flexibility to procure all aircraft in a single procurement lot, or to procure aircraft and engines in a multiple Lot format. The U.S. Services will procure Lots 12, 13 and 14 as single year procurements and will only request Congressional approval to award a single contract to procure material and equipment in Economic Order Quantity (EOQ) for FY 2019 and FY 2020. Procuring approximately 445 aircraft with this Block Buy/EOQ strategy is estimated to save approximately \$2B compared to the Lot 11 annual procurement price. The estimated savings have been validated by an F-35 JPO cost estimate, an industry analysis study, and an independent assessment conducted by RAND Corporation.

The current estimate for F-35 total procurement quantity increased from 2443 to 2456. This is the result of an increase of 13 F-35B aircraft to be procured by the United States Marine Corps (USMC). The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the Department of Navy Aircraft Procurement accounts. The USMC validated this requirement through the Marine Corps Requirements Oversight Council (MROC). The additional aircraft are fully funded and the funding is reflected in the FY 2018 President's Budget submission. The additional aircraft were added after the completion of the congressionally directed Department-wide fighter mix study. The strategic review will

assess future tactical fighter force inventory requirements across the Department.

Sustainment

In October 2016, F-35 JPO Product Support Manager (PSM) released a request for information (RFI) for F-35 warehousing and support equipment repairs. The current RFI includes 709 components from which we anticipate the DoD will assign to the Services and Partners as well as the FMS customers such as wheels and brakes, electrical and hydraulic systems, maintenance of support equipment and warehousing for the global supply chain. These same capabilities either currently exist or are being developed at the U.S. Services' depots in the U.S. in accordance with current U.S. law.

The Hybrid Product Support Integrator (HPSI) was established in 2016 as outlined within the Global Support Solution and as directed by the PSM. In 2017, the PSM working with Department of the Air Force and Department of the Navy established an event based three-phased approach to continue the transition of the HPSI. Phase one is the initial HPSI Activation, Phase two is Solution maturation and Cost Reduction and Phase three is Solution Optimization. The primary focus within Phase 1 will be to achieve the Warfighters required performance outcomes within allocated budgets. During this phase, system-level performance outcomes will continue to be managed by the PSM, with accountability and metrics flowed from the PSM to HPSI Manager and Industry Leads through Service Level Agreements (SLAs) and contracts. In addition, this phase will also allow refinement of processes to include establishment by the PSM of individual Performance Based Agreements (PBAs) with F-35 Users as well as internal performance arrangements with other elements of the JPO providing support to achieve the required sustainment outcomes. This will ensure "best for enterprise" behaviors are evaluated to determine what, if any, changes or improvements are needed to deliver program commitments.

International and FMS

International participation on the program with eight Partners and three FMS customers remains strong. Over the past ten months, aircraft deliveries to our United Kingdom, Italy, and Norway Partners have continued, while FMS customers Israel and Japan received their first aircraft deliveries. Two significant milestones for Italy included the delivery of its first jet completed at the Italian FACO facility in Cameri, Italy and also the first aircraft arrival into its operational base located in Amendola, Italy. Notably, Israel also achieved first aircraft arrival into its operational base in Nevatim, Israel and it has identified a requirement for an additional 17 aircraft from an existing fleet of 33. Also, the Japanese aircraft FACO in Nagoya and engine FACO in Mizuho are both on track to deliver their first respective Japanese aircraft and engine later this year.

In May 2016, the two Dutch aircraft that are part of the DT fleet at Edwards Air Force Base (AFB) in California completed their first deployment to the Netherlands, where they conducted aerial and ground environmental noise surveys, performed flights over the North Sea range, and also appeared at the Netherlands' Open Days, the largest air show held annually in the Netherlands.

In early June 2016, the Danish Parliament approved its government's recommendation to acquire 27 F-35As, and Denmark became the 7th partner nation and 11th nation overall to buy the F-35. Also, that same month, F-35Bs landed for the first time in the United Kingdom. The United Kingdom F-35B was the first to touch down and was followed shortly afterwards by two other F-35Bs from the USMC and two USAF F-35As. The F-35s were in the United Kingdom to support the Royal International Air Tattoo and the Farnborough Air Show taking place in early July. More importantly, this was a deployment for the United Kingdom, USMC and USAF where they sustained and maintained the aircraft, generated sorties, and ultimately provided lessons learned on future F-35 operations.

In September 2016, Turkey held the 65 percent Design Review for its first Main Operating Base which will be located in Malatya, Turkey. This review is a major milestone on the way to ensuring Turkey's infrastructure is ready for aircraft arrival in 2019. In late October 2016, the Turkey Defense Industrial Executive Committee met and approved the Block Buy for 24 aircraft over three contract years.

Following flight testing and the USAF's recommendation, Australia authorized aerial refueling operations between its KC-30A tanker aircraft and F-35As in January. Preparations at Australia's first operating base, Royal Australian AFB in Williamtown continue as construction of hangers, training centers, and information support centers remain on schedule.

November was a significant month for South Korea as it was one of the countries assigned initial F-35 component repair capability. In addition, the first six Korean aircraft were awarded as part of the recent Lot 10 aircraft contract, with expected

delivery in 2018.

Over the past year, the JPO has worked closely with the U.S. Defense Security Cooperation Agency to promptly and thoroughly answer all questions provided by the Canadian government in support of its fighter replacement analysis. Further, the JPO has continued to work with potential FMS customers, including Belgium, Finland, and Spain, responding to all requests for information and other official inquiries.

In summary, the F-35 Program is nearing delivery of full Block 3F capability and completion of development within the cost and schedule boundaries laid in during the 2011 Rebaseline, remaining work in SDD is understood and stable, the program continues to plan the development transition to FoM, the F-35 fleet is rapidly expanding and F-35s are now flying in the U.S., Japan, Italy, and Israel. The Program is also continuing to ramp up production and building the global sustainment enterprise. As always, our number one overarching priority is to continue to drive cost out of all aspects of the F-35 Program, making it more affordable for all our customers.

Threshold Breaches

F-35 Aircraft

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches

Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

F-35 Engine

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches

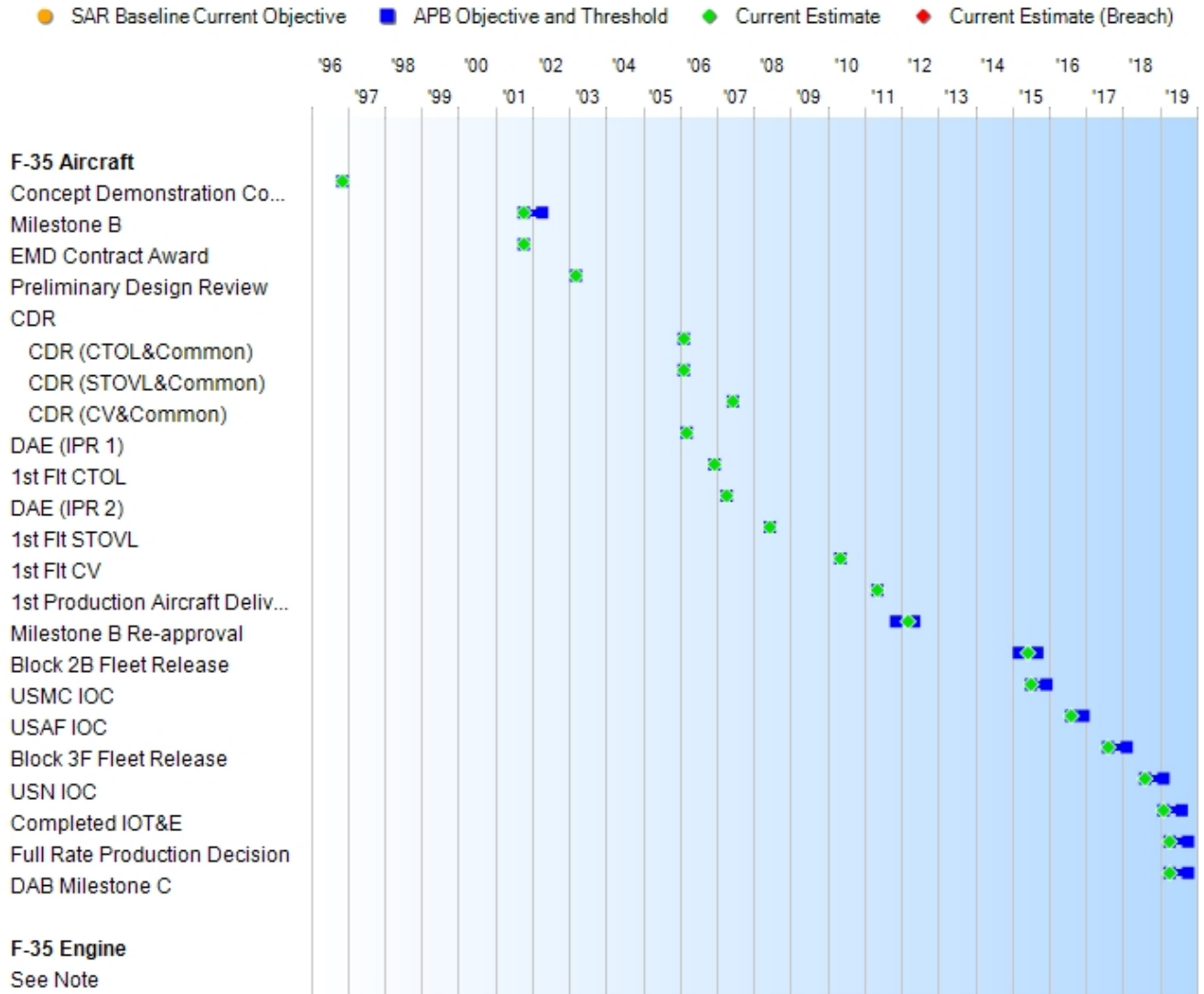
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



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 549 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	Execute 549 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	(Ch-1)
Combat Radius NM -STOVL Variant					
550	550	450	505	505	(Ch-1)
Combat Radius NM -CV Variant					
730	730	600	TBD	640	(Ch-1)
Mission Reliability - CTOL Variant					
98%	98%	93%	93%	93%	(Ch-1)
Mission Reliability - CV Variant					
98%	98%	95%	95%	95%	(Ch-1)
Mission Reliability - STOVL Variant					
98%	98%	95%	97%	97%	(Ch-1)
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	(Ch-1)

				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	(Ch-1)
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	(Ch-1)
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	(Ch-1)
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	(Ch-1)
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	(Ch-1)
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 144 knots.	Vpa. Maximum approach speed (Vpa) at required carrier landing weight (RCLW) of less than 144 knots.	

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) Operational Requirements Document (ORD) Change 3 dated August 19, 2008 as modified by JROC Memorandum 040-12 dated March 16, 2012. For Demonstrated Performance, extensive flight test data was used to calibrate the aero-performance model. The values listed herein as "Demonstrated Performance" are based on the final aero-performance model (up-and-away) for the F-35A and F-35B.

Notes

The F-35 Program is currently in developmental testing, and will provide demonstrated performance with the Block 3F full capability aircraft.

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 Follow-on Modernization 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	
			MILCON, USN	(Shared)
Navy	1205	01	0212176N	
	Project		Name	
			MILCON, USN	(Shared)
Navy	1205	01	0216496M	
	Project		Name	
			MILCON, USN	(Shared)
Navy	1205	01	0703676N	
	Project		Name	
			MILCON, USN	(Shared)
Navy	1205	01	0712876N	
	Project		Name	

			MILCON, USN	(Shared)
Navy	1205	01	0805976N	
	Project		Name	
			MILCON, USN	(Shared)
Air Force	3300	01	0207142F	
	Project		Name	
			MILCON, AF	(Shared)
Air Force	3300	01	0207597F	
	Project		Name	
			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 Follow-on Modernization 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
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RDT&E, DARPA

(Sunk)

Defense-Wide 9999 05

Project	Name
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RDT&E, Non-Treasury Funds

Procurement

Appn	BA	PE
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Navy 1506 01 0204146N

Line Item	Name
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0147 JSF (Navy)

Navy 1506 01 0204146M

Line Item	Name
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0152 JSF (Marine Corps)

Navy 1506 06 0204146N

Line Item	Name
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0605 Initial Spares (Navy) (Shared)

Navy 1506 06 0204146M

Line Item	Name
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0605 Initial Spares (Marine Corps) (Shared)

Air Force 3010 06 0207142F

Line Item	Name
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000999 Initial Spares (Air Force) (Shared)

Air Force 3010 01 0207142F

Line Item	Name
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ATA000 JSF (Air Force)

Air Force 3010 05 0207142F

Line Item	Name
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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	--	59810.7	55233.8	55182.9	55497.1
Procurement	266665.8	266665.8	--	260775.8	335680.7	335680.7	346190.4
Flyaway	--	--	--	231020.3	--	--	310261.7
Recurring	--	--	--	206533.5	--	--	278468.6
Non Recurring	--	--	--	24486.8	--	--	31793.1
Support	--	--	--	29755.5	--	--	35928.7
Other Support	--	--	--	18572.8	--	--	22530.7
Initial Spares	--	--	--	11182.7	--	--	13398.0
MILCON	4168.0	4168.0	--	4034.1	4797.3	4797.3	4793.4
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	330511.1	330231.9	N/A	324620.6	395711.8	395660.9	406480.9

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	46685.6	44410.1	43360.7	43530.3
Procurement	224332.9	224332.9	246766.2	220857.7	282647.8	282647.8	293758.2
Flyaway	--	--	--	196277.1	--	--	264080.3
Recurring	--	--	--	174227.3	--	--	235363.0
Non Recurring	--	--	--	22049.8	--	--	28717.3
Support	--	--	--	24580.6	--	--	29677.9
Other Support	--	--	--	16664.8	--	--	20223.3
Initial Spares	--	--	--	7915.8	--	--	9454.6
MILCON	4168.0	4168.0	4584.8	4034.1	4797.3	4797.3	4793.4
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	276483.0	274958.4	N/A	271577.4	331855.2	330805.8	342081.9

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 increased from 2443 to 2456. This is the result of an increase of 13 F-35B aircraft to be procured by the United States Marine Corps (USMC). The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the Department of Navy Aircraft Procurement accounts. The USMC validated this requirement through the Marine Corps Requirements Oversight Council (MROC). The additional aircraft are fully funded and the funding is reflected in the FY 2018 President's Budget submission. The additional aircraft were added after the completion of the congressionally directed Department-wide fighter mix study. The strategic review will assess future tactical fighter force inventory requirements across the Department.

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	13125.1	10823.7	11822.2	11966.8
Procurement	42332.9	42332.9	46566.2	39918.1	53032.9	53032.9	52432.2
Flyaway	--	--	--	34743.2	--	--	46181.4
Recurring	--	--	--	32306.2	--	--	43105.6
Non Recurring	--	--	--	2437.0	--	--	3075.8
Support	--	--	--	5174.9	--	--	6250.8
Other Support	--	--	--	1908.0	--	--	2307.4
Initial Spares	--	--	--	3266.9	--	--	3943.4
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	53043.2	63856.6	64855.1	64399.0

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
Procurement	2443	2443	2456
Total	2457	2457	2470

Quantity Notes

The current estimate for F-35 total procurement quantity increased from 2443 to 2456. This is the result of an increase of 13 F-35B aircraft to be procured by the United States Marine Corps (USMC). The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the Department of Navy Aircraft Procurement accounts. The USMC validated this requirement through the Marine Corps Requirements Oversight Council (MROC). The additional aircraft are fully funded and the funding is reflected in the FY 2018 President's Budget submission. The additional aircraft were added after the completion of the congressionally directed Department-wide fighter mix study. The strategic review will assess future tactical fighter force inventory requirements across the Department.

Cost and Funding

Funding Summary - Total Program

Appropriation Summary									
FY 2018 President's Budget / December 2016 SAR (TY\$ M)									
Appropriation	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
RDT&E	53326.9	1436.9	527.8	186.8	11.1	6.6	1.0	0.0	55497.1
Procurement	55901.4	9811.3	9659.9	9297.9	10928.2	12610.8	12195.7	225785.2	346190.4
MILCON	1740.3	363.0	269.3	334.7	104.4	0.0	27.2	1954.5	4793.4
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2018 Total	110968.6	11611.2	10457.0	9819.4	11043.7	12617.4	12223.9	227739.7	406480.9
PB 2017 Total	111219.4	10711.6	11032.3	10600.5	11425.5	13232.6	15223.2	195596.9	379042.0
Delta	-250.8	899.6	-575.3	-781.1	-381.8	-615.2	-2999.3	32142.8	27438.9

Cost and Funding

Funding Summary - F-35 Aircraft

Appropriation Summary									
FY 2018 President's Budget / December 2016 SAR (TY\$ M)									
Appropriation	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
RDT&E	41483.6	1313.4	527.8	186.8	11.1	6.6	1.0	0.0	43530.3
Procurement	47883.0	8194.8	7999.2	7749.2	9106.0	10510.3	10151.1	192164.6	293758.2
MILCON	1740.3	363.0	269.3	334.7	104.4	0.0	27.2	1954.5	4793.4
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2018 Total	91106.9	9871.2	8796.3	8270.7	9221.5	10516.9	10179.3	194119.1	342081.9
PB 2017 Total	91294.7	9146.4	9223.0	8826.1	9513.6	10991.8	12736.8	166658.5	318390.9
Delta	-187.8	724.8	-426.7	-555.4	-292.1	-474.9	-2557.5	27460.6	23691.0

Quantity Summary										
FY 2018 President's Budget / December 2016 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
Development	14	0	0	0	0	0	0	0	0	14
Production	0	285	74	70	77	84	99	99	1668	2456
PB 2018 Total	14	285	74	70	77	84	99	99	1668	2470
PB 2017 Total	14	285	63	70	80	86	105	125	1629	2457
Delta	0	0	11	0	-3	-2	-6	-26	39	13

Funding Summary - F-35 Engine

Appropriation Summary									
FY 2018 President's Budget / December 2016 SAR (TY\$ M)									
Appropriation	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
RDT&E	11843.3	123.5	0.0	0.0	0.0	0.0	0.0	0.0	11966.8
Procurement	8018.4	1616.5	1660.7	1548.7	1822.2	2100.5	2044.6	33620.6	52432.2
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 2018 Total	19861.7	1740.0	1660.7	1548.7	1822.2	2100.5	2044.6	33620.6	64399.0
PB 2017 Total	19924.7	1565.2	1809.3	1774.4	1911.9	2240.8	2486.4	28938.4	60651.1
Delta	-63.0	174.8	-148.6	-225.7	-89.7	-140.3	-441.8	4682.2	3747.9

Quantity Summary										
FY 2018 President's Budget / December 2016 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
Development	14	0	0	0	0	0	0	0	0	14
Production	0	285	74	70	77	84	99	99	1668	2456
PB 2018 Total	14	285	74	70	77	84	99	99	1668	2470
PB 2017 Total	14	285	63	70	80	86	105	125	1629	2457
Delta	0	0	11	0	-3	-2	-6	-26	39	13

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								
Fiscal Year	Quantity	TY \$M						Total Program
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support		
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							
Fiscal Year	Quantity	TY \$M					
		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	--	--	--	--	--	--	460.5
2017	--	--	--	--	--	--	339.7
2018	--	--	--	--	--	--	255.7
2019	--	--	--	--	--	--	69.7
2020	--	--	--	--	--	--	7.8
2021	--	--	--	--	--	--	5.6
Subtotal	5	--	--	--	--	--	18636.2

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	--	--	--	--	--	--	1240.0
2013	--	--	--	--	--	--	945.1
2014	--	--	--	--	--	--	530.6
2015	--	--	--	--	--	--	438.2
2016	--	--	--	--	--	--	428.9
2017	--	--	--	--	--	--	310.4
2018	--	--	--	--	--	--	229.0
2019	--	--	--	--	--	--	61.2
2020	--	--	--	--	--	--	6.7
2021	--	--	--	--	--	--	4.7
Subtotal	5	--	--	--	--	--	20010.1

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	--	--	--	--	--	--	841.9
2017	--	--	--	--	--	--	951.7
2018	--	--	--	--	--	--	244.6
2019	--	--	--	--	--	--	117.1
2020	--	--	--	--	--	--	3.3
2021	--	--	--	--	--	--	1.0
2022	--	--	--	--	--	--	1.0
Subtotal	9	--	--	--	--	--	19861.1

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	--	--	--	--	--	--	943.2
2013	--	--	--	--	--	--	1051.8
2014	--	--	--	--	--	--	655.2
2015	--	--	--	--	--	--	732.7
2016	--	--	--	--	--	--	784.1
2017	--	--	--	--	--	--	869.5
2018	--	--	--	--	--	--	219.1
2019	--	--	--	--	--	--	102.8
2020	--	--	--	--	--	--	2.8
2021	--	--	--	--	--	--	0.8
2022	--	--	--	--	--	--	0.8
Subtotal	9	--	--	--	--	--	21118.0

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	--	617.8	2652.4	433.0	3085.4	
2015	28	2715.8	--	542.0	3257.8	605.0	3862.8	
2016	47	4076.0	--	561.5	4637.5	626.3	5263.8	
2017	48	3761.0	--	255.2	4016.2	737.2	4753.4	
2018	46	3730.5	--	613.5	4344.0	542.2	4886.2	
2019	48	3351.3	--	486.9	3838.2	606.0	4444.2	
2020	48	3879.7	--	520.1	4399.8	619.5	5019.3	
2021	54	4116.5	--	482.1	4598.6	921.5	5520.1	
2022	54	3795.4	--	525.2	4320.6	704.6	5025.2	
2023	60	4906.8	--	558.1	5464.9	870.8	6335.7	
2024	60	4712.4	--	548.9	5261.3	745.3	6006.6	
2025	60	4273.2	--	554.4	4827.6	729.5	5557.1	
2026	60	4326.5	--	556.7	4883.2	767.9	5651.1	
2027	60	4792.7	--	515.3	5308.0	684.5	5992.5	
2028	60	5507.9	--	526.4	6034.3	590.0	6624.3	
2029	60	5143.9	--	533.9	5677.8	569.4	6247.2	
2030	60	4721.5	--	545.6	5267.1	599.3	5866.4	
2031	60	5024.0	--	563.5	5587.5	676.3	6263.8	
2032	60	5792.3	--	587.9	6380.2	617.3	6997.5	
2033	60	6756.5	--	607.4	7363.9	764.4	8128.3	
2034	60	6431.8	--	609.0	7040.8	293.0	7333.8	
2035	60	5868.0	--	612.5	6480.5	103.5	6584.0	
2036	60	5982.0	--	623.0	6605.0	101.4	6706.4	
2037	60	6548.8	--	676.1	7224.9	88.8	7313.7	
2038	60	7433.1	--	689.4	8122.5	73.1	8195.6	
2039	60	7121.9	--	703.4	7825.3	72.0	7897.3	
2040	60	6514.5	--	716.2	7230.7	52.5	7283.2	
2041	60	6647.7	--	729.1	7376.8	26.8	7403.6	
2042	60	7304.5	--	733.2	8037.7	--	8037.7	
2043	60	7296.9	--	638.8	7935.7	--	7935.7	
2044	27	4441.1	--	353.8	4794.9	--	4794.9	
Subtotal	1763	169875.7	--	19694.7	189570.4	16878.7	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	--	116.8	--	--	116.8	--	116.8	
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	2711.6	--	561.0	3272.6	669.8	3942.4	
2012	18	1983.6	--	365.0	2348.6	751.1	3099.7	
2013	19	1994.3	--	73.6	2067.9	508.4	2576.3	
2014	19	1930.5	--	586.2	2516.7	410.9	2927.6	
2015	28	2538.3	--	506.5	3044.8	565.5	3610.3	
2016	47	3742.5	--	515.5	4258.0	575.1	4833.1	
2017	48	3386.7	--	229.8	3616.5	663.9	4280.4	
2018	46	3293.4	--	541.6	3835.0	478.7	4313.7	
2019	48	2900.6	--	421.4	3322.0	524.5	3846.5	
2020	48	3292.1	--	441.3	3733.4	525.7	4259.1	
2021	54	3424.6	--	401.1	3825.7	766.5	4592.2	
2022	54	3095.5	--	428.3	3523.8	574.7	4098.5	
2023	60	3923.5	--	446.3	4369.8	696.3	5066.1	
2024	60	3694.2	--	430.3	4124.5	584.2	4708.7	
2025	60	3284.2	--	426.1	3710.3	560.6	4270.9	
2026	60	3260.0	--	419.4	3679.4	578.6	4258.0	
2027	60	3540.4	--	380.6	3921.0	505.7	4426.7	
2028	60	3989.0	--	381.2	4370.2	427.3	4797.5	
2029	60	3652.3	--	379.1	4031.4	404.3	4435.7	
2030	60	3286.7	--	379.7	3666.4	417.2	4083.6	
2031	60	3428.7	--	384.6	3813.3	461.5	4274.8	
2032	60	3875.5	--	393.3	4268.8	413.0	4681.8	
2033	60	4432.0	--	398.4	4830.4	501.4	5331.8	
2034	60	4136.3	--	391.6	4527.9	188.4	4716.3	
2035	60	3699.7	--	386.1	4085.8	65.3	4151.1	
2036	60	3697.6	--	385.1	4082.7	62.7	4145.4	
2037	60	3968.6	--	409.7	4378.3	53.8	4432.1	
2038	60	4416.1	--	409.7	4825.8	43.4	4869.2	
2039	60	4148.3	--	409.7	4558.0	41.9	4599.9	
2040	60	3720.1	--	409.0	4129.1	30.0	4159.1	
2041	60	3721.7	--	408.2	4129.9	15.0	4144.9	
2042	60	4009.3	--	402.4	4411.7	--	4411.7	
2043	60	3926.5	--	343.8	4270.3	--	4270.3	
2044	27	2343.0	--	186.6	2529.6	--	2529.6	
Subtotal	1763	120554.1	--	14539.2	135093.3	13758.0	148851.3	

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	2711.6
2012	18	1983.6
2013	19	1994.3
2014	19	1930.5
2015	28	2538.3
2016	47	3742.5
2017	48	3386.7
2018	46	3293.4
2019	48	2900.6
2020	48	3292.1
2021	54	3424.6
2022	54	3095.5
2023	60	3923.5
2024	60	3694.2
2025	60	3284.2
2026	60	3260.0
2027	60	3540.4
2028	60	3989.0
2029	60	3652.3
2030	60	3286.7
2031	60	3428.7
2032	60	3875.5
2033	60	4432.0
2034	60	4136.3
2035	60	3699.7
2036	60	3697.6
2037	60	3968.6
2038	60	4416.1
2039	60	4148.3
2040	60	3720.1
2041	60	3721.7
2042	60	4009.3
2043	60	3926.5
2044	27	2459.8

Subtotal	1763	120554.1
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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	--	406.3	1611.8	642.3	2254.1	
2015	10	1115.0	--	585.5	1700.5	414.1	2114.6	
2016	21	2130.3	--	601.9	2732.2	629.9	3362.1	
2017	26	2431.3	--	366.0	2797.3	644.1	3441.4	
2018	24	2287.3	--	347.4	2634.7	478.3	3113.0	
2019	29	2340.9	--	356.8	2697.7	607.3	3305.0	
2020	36	3064.8	--	423.9	3488.7	598.0	4086.7	
2021	45	3884.3	--	358.4	4242.7	747.5	4990.2	
2022	45	3955.9	--	393.1	4349.0	776.9	5125.9	
2023	45	4242.7	--	424.1	4666.8	586.3	5253.1	
2024	45	4078.9	--	401.9	4480.8	404.0	4884.8	
2025	45	3678.6	--	413.5	4092.1	585.4	4677.5	
2026	45	3678.1	--	410.3	4088.4	528.8	4617.2	
2027	45	4026.5	--	391.1	4417.6	351.3	4768.9	
2028	45	4358.2	--	405.9	4764.1	518.7	5282.8	
2029	45	4229.3	--	397.1	4626.4	246.0	4872.4	
2030	39	3457.7	--	354.6	3812.3	358.3	4170.6	
2031	24	2171.3	--	492.8	2664.1	647.7	3311.8	
2032	3	307.6	--	340.7	648.3	520.8	1169.1	
Subtotal	693	65487.3	--	9022.6	74509.9	12799.2	87309.1	

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	1473.3	--	247.4	1720.7	425.6	2146.3
2012	13	1435.8	--	320.8	1756.6	725.6	2482.2
2013	10	1064.4	--	42.4	1106.8	535.7	1642.5
2014	10	1143.8	--	385.5	1529.3	609.5	2138.8
2015	10	1042.1	--	547.3	1589.4	387.0	1976.4
2016	21	1956.0	--	552.7	2508.7	578.3	3087.0
2017	26	2189.4	--	329.6	2519.0	579.9	3098.9
2018	24	2019.3	--	306.6	2325.9	422.3	2748.2
2019	29	2026.1	--	308.8	2334.9	525.6	2860.5
2020	36	2600.6	--	359.7	2960.3	507.5	3467.8
2021	45	3231.4	--	298.2	3529.6	621.8	4151.4
2022	45	3226.4	--	320.6	3547.0	633.7	4180.7
2023	45	3392.5	--	339.0	3731.5	468.9	4200.4
2024	45	3197.6	--	315.0	3512.6	316.7	3829.3
2025	45	2827.2	--	317.8	3145.0	449.9	3594.9
2026	45	2771.4	--	309.1	3080.5	398.5	3479.0
2027	45	2974.4	--	288.9	3263.3	259.5	3522.8
2028	45	3156.3	--	294.0	3450.3	375.7	3826.0
2029	45	3002.9	--	282.0	3284.9	174.6	3459.5
2030	39	2406.9	--	246.9	2653.8	249.4	2903.2
2031	24	1481.8	--	336.3	1818.1	442.1	2260.2
2032	3	205.8	--	228.0	433.8	348.4	782.2
Subtotal	693	53673.2	--	7510.6	61183.8	10822.6	72006.4

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	1473.3
2012	13	1435.8
2013	10	1064.4
2014	10	1143.8
2015	10	1042.1
2016	21	1956.0
2017	26	2189.4
2018	24	2019.3
2019	29	2026.1
2020	36	2600.6
2021	45	3231.4
2022	45	3226.4
2023	45	3392.5
2024	45	3197.6
2025	45	2827.2
2026	45	2771.4
2027	45	2974.4
2028	45	3156.3
2029	45	3002.9
2030	39	2406.9
2031	24	1481.8
2032	3	308.1
Subtotal	693	53673.2

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	26.7
2018	15.7
2019	152.5
2020	--
2021	--
2022	27.2
2023	171.3
2024	165.0
2025	274.7
2026	91.9
2027	100.0
2028	85.1
2029	111.7
Subtotal	2110.6

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	369.3
2012	165.8
2013	90.1
2014	1.1
2015	108.0
2016	57.9
2017	23.4
2018	13.5
2019	128.5
2020	--
2021	--
2022	21.6
2023	133.4
2024	126.0
2025	205.6
2026	67.4
2027	71.9
2028	60.0
2029	77.2
Subtotal	1783.6

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	182.2
2020	104.4
2021	--
2022	--
2023	83.5
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	2682.8

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	136.4
2012	23.4
2013	12.8
2014	52.4
2015	60.8
2016	177.4
2017	294.9
2018	218.0
2019	153.6
2020	86.3
2021	--
2022	--
2023	65.0
2024	54.3
2025	45.7
2026	43.5
2027	92.7
2028	81.7
2029	80.8
2030	73.7
2031	47.7
2032	46.4
2033	24.0
2034	15.5
2035	2.6
Subtotal	2250.5

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	--	--	--	--	--	--	63.8
Subtotal	5	--	--	--	--	--	5536.4

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	--	--	--	--	--	--	49.8
2015	--	--	--	--	--	--	50.8
2016	--	--	--	--	--	--	34.0
2017	--	--	--	--	--	--	58.3
Subtotal	5	--	--	--	--	--	6077.7

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	--	--	--	--	--	--	100.7
2017	--	--	--	--	--	--	59.7
Subtotal	9	--	--	--	--	--	6088.3

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	--	--	--	--	--	--	163.7
2016	--	--	--	--	--	--	93.8
2017	--	--	--	--	--	--	54.5
Subtotal	9	--	--	--	--	--	6645.2

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

Annual Funding - F-35 Engine							
0400 RDT&E Research, Development, Test, and Evaluation, Defense-Wide							
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	--	--	--	--	--	--	7.7
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	116.2	518.4	
2016	47	606.1	--	23.2	629.3	126.7	756.0	
2017	48	621.9	--	19.2	641.1	166.6	807.7	
2018	46	646.6	--	46.2	692.8	135.1	827.9	
2019	48	585.5	--	36.6	622.1	141.8	763.9	
2020	48	685.4	--	39.1	724.5	166.1	890.6	
2021	54	735.4	--	36.3	771.7	195.6	967.3	
2022	54	672.1	--	39.5	711.6	170.3	881.9	
2023	60	866.7	--	42.0	908.7	248.6	1157.3	
2024	60	845.5	--	41.3	886.8	170.4	1057.2	
2025	60	766.0	--	41.7	807.7	198.8	1006.5	
2026	60	773.6	--	41.9	815.5	199.1	1014.6	
2027	60	847.4	--	38.8	886.2	137.0	1023.2	
2028	60	963.0	--	39.6	1002.6	127.1	1129.7	
2029	60	915.2	--	40.2	955.4	125.8	1081.2	
2030	60	832.7	--	41.1	873.8	132.8	1006.6	
2031	60	856.7	--	42.4	899.1	141.6	1040.7	
2032	60	950.3	--	44.2	994.5	135.8	1130.3	
2033	60	1079.9	--	45.7	1125.6	154.1	1279.7	
2034	60	1023.8	--	45.8	1069.6	81.6	1151.2	
2035	60	933.2	--	46.1	979.3	11.5	990.8	
2036	60	950.3	--	46.9	997.2	11.3	1008.5	
2037	60	1039.5	--	50.9	1090.4	9.9	1100.3	
2038	60	1178.2	--	51.9	1230.1	8.1	1238.2	
2039	60	1117.1	--	52.9	1170.0	8.0	1178.0	
2040	60	1018.9	--	53.9	1072.8	5.8	1078.6	
2041	60	1039.1	--	54.9	1094.0	3.0	1097.0	
2042	60	1140.1	--	55.2	1195.3	--	1195.3	
2043	60	1113.5	--	48.1	1161.6	--	1161.6	
2044	27	496.0	--	26.6	522.6	--	522.6	
Subtotal	1763	27344.1	--	1626.5	28970.6	3676.4	32647.0	

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	348.1	--	90.3	438.4	134.6	573.0
2012	18	267.5	--	63.8	331.3	119.5	450.8
2013	19	252.3	--	11.4	263.7	86.2	349.9
2014	19	267.7	--	29.5	297.2	45.1	342.3
2015	28	361.4	--	14.5	375.9	108.6	484.5
2016	47	556.5	--	21.3	577.8	116.3	694.1
2017	48	560.0	--	17.3	577.3	150.0	727.3
2018	46	570.8	--	40.8	611.6	119.3	730.9
2019	48	506.8	--	31.7	538.5	122.7	661.2
2020	48	581.6	--	33.2	614.8	140.9	755.7
2021	54	599.8	--	29.6	629.4	159.5	788.9
2022	54	543.5	--	31.9	575.4	137.7	713.1
2023	60	693.0	--	33.6	726.6	198.8	925.4
2024	60	662.8	--	32.4	695.2	133.6	828.8
2025	60	588.7	--	32.0	620.7	152.9	773.6
2026	60	582.9	--	31.6	614.5	150.0	764.5
2027	60	626.0	--	28.7	654.7	101.2	755.9
2028	60	697.4	--	28.7	726.1	92.1	818.2
2029	60	649.8	--	28.5	678.3	89.4	767.7
2030	60	579.6	--	28.6	608.2	92.5	700.7
2031	60	584.7	--	28.9	613.6	96.6	710.2
2032	60	635.8	--	29.6	665.4	90.9	756.3
2033	60	708.4	--	30.0	738.4	101.0	839.4
2034	60	658.4	--	29.5	687.9	52.4	740.3
2035	60	588.4	--	29.0	617.4	7.3	624.7
2036	60	587.4	--	29.0	616.4	7.0	623.4
2037	60	629.9	--	30.9	660.8	6.0	666.8
2038	60	700.0	--	30.8	730.8	4.8	735.6
2039	60	650.7	--	30.7	681.4	4.7	686.1
2040	60	581.8	--	30.8	612.6	3.3	615.9
2041	60	581.7	--	30.8	612.5	1.7	614.2
2042	60	625.8	--	30.3	656.1	--	656.1
2043	60	599.2	--	25.9	625.1	--	625.1
2044	27	261.7	--	14.0	275.7	--	275.7
Subtotal	1763	19387.4	--	1241.9	20629.3	2981.6	23610.9

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	348.1
2012	18	267.5
2013	19	252.3
2014	19	267.7
2015	28	361.4
2016	47	556.5
2017	48	560.0
2018	46	570.8
2019	48	506.8
2020	48	581.6
2021	54	599.8
2022	54	543.5
2023	60	693.0
2024	60	662.8
2025	60	588.7
2026	60	582.9
2027	60	626.0
2028	60	697.4
2029	60	649.8
2030	60	579.6
2031	60	584.7
2032	60	635.8
2033	60	708.4
2034	60	658.4
2035	60	588.4
2036	60	587.4
2037	60	629.9
2038	60	700.0
2039	60	650.7
2040	60	581.8
2041	60	581.7
2042	60	625.8
2043	60	599.2
2044	27	272.3

Subtotal	1763	19387.4
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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	--	27.6	287.1	68.0	355.1
2016	21	362.7	--	22.3	385.0	109.9	494.9
2017	26	648.6	--	27.5	676.1	132.7	808.8
2018	24	704.2	--	26.1	730.3	102.5	832.8
2019	29	650.3	--	26.9	677.2	107.6	784.8
2020	36	779.2	--	31.9	811.1	120.5	931.6
2021	45	938.8	--	27.0	965.8	167.4	1133.2
2022	45	964.6	--	29.6	994.2	168.5	1162.7
2023	45	1042.4	--	85.4	1127.8	136.5	1264.3
2024	45	1021.8	--	97.7	1119.5	84.5	1204.0
2025	45	927.7	--	93.4	1021.1	118.4	1139.5
2026	45	935.6	--	96.2	1031.8	114.5	1146.3
2027	45	1022.8	--	67.1	1089.9	68.4	1158.3
2028	45	1092.0	--	64.0	1156.0	107.8	1263.8
2029	45	1047.0	--	67.6	1114.6	45.6	1160.2
2030	39	776.4	--	52.8	829.2	70.5	899.7
2031	24	318.9	--	122.1	441.0	92.1	533.1
2032	3	42.6	--	91.6	134.2	68.1	202.3
Subtotal	693	15761.5	--	1449.3	17210.8	2574.4	19785.2

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	394.7	--	110.9	505.6	120.6	626.2
2012	13	186.0	--	56.0	242.0	60.3	302.3
2013	10	227.7	--	25.6	253.3	163.2	416.5
2014	10	215.5	--	20.5	236.0	135.1	371.1
2015	10	242.5	--	25.8	268.3	63.6	331.9
2016	21	333.0	--	20.5	353.5	100.9	454.4
2017	26	584.1	--	24.8	608.9	119.4	728.3
2018	24	621.7	--	23.0	644.7	90.5	735.2
2019	29	562.8	--	23.3	586.1	93.2	679.3
2020	36	661.2	--	27.1	688.3	102.2	790.5
2021	45	781.0	--	22.5	803.5	139.2	942.7
2022	45	786.7	--	24.1	810.8	137.5	948.3
2023	45	833.5	--	68.3	901.8	109.1	1010.9
2024	45	801.0	--	76.6	877.6	66.2	943.8
2025	45	713.0	--	71.8	784.8	91.0	875.8
2026	45	705.0	--	72.5	777.5	86.2	863.7
2027	45	755.6	--	49.5	805.1	50.6	855.7
2028	45	790.9	--	46.4	837.3	78.0	915.3
2029	45	743.4	--	48.1	791.5	32.3	823.8
2030	39	540.5	--	36.7	577.2	49.1	626.3
2031	24	217.6	--	83.3	300.9	62.9	363.8
2032	3	28.5	--	61.4	89.9	45.5	135.4
Subtotal	693	12918.8	--	1195.1	14113.9	2193.3	16307.2

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	394.7
2012	13	186.0
2013	10	227.7
2014	10	215.5
2015	10	242.5
2016	21	333.0
2017	26	584.1
2018	24	621.7
2019	29	562.8
2020	36	661.2
2021	45	781.0
2022	45	786.7
2023	45	833.5
2024	45	801.0
2025	45	713.0
2026	45	705.0
2027	45	755.6
2028	45	790.9
2029	45	743.4
2030	39	540.5
2031	24	217.6
2032	3	57.4
Subtotal	693	12918.8

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	16	3286.5	Japan signed an amendment to add 6 F-35A's in September 2015. Japan has an option to purchase 26 additional F-35A aircraft.
Israel	2/15/2015	33	5792.7	Israel submitted an Letter of Request on November 29, 2016 to exercise their option to purchase an additional 17 F-35A aircraft. Letter of Acceptance Amendment signature expected In 2nd Quarter FY 2017.
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	BY 2012 \$M	% Change
	Current UCR Baseline (Jun 2014 APB)	Current Estimate (Dec 2016 SAR)	
Program Acquisition Unit Cost			
Cost	274958.4	271577.4	
Quantity	2457	2470	
Unit Cost	111.908	109.950	-1.75
Average Procurement Unit Cost			
Cost	224332.9	220857.7	
Quantity	2443	2456	
Unit Cost	91.827	89.926	-2.07
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 \$M	BY 2012 \$M	% Change
	Revised Original UCR Baseline (Mar 2012 APB)	Current Estimate (Dec 2016 SAR)	
Program Acquisition Unit Cost			
Cost	276482.2	271577.4	
Quantity	2458	2470	
Unit Cost	112.483	109.950	-2.25
Average Procurement Unit Cost			
Cost	224333.7	220857.7	
Quantity	2443	2456	
Unit Cost	91.827	89.926	-2.07

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 increased from 2443 to 2456. This is the result of an increase of 13 F-35B aircraft to be procured by the United States Marine Corps (USMC). The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the Department of Navy Aircraft Procurement accounts. The USMC validated this requirement through the Marine Corps Requirements Oversight Council (MROC). The additional aircraft are fully funded and the funding is reflected in the FY 2018 President's Budget submission. The additional aircraft were added after the completion of the congressionally directed Department-wide fighter mix study. The strategic review will assess future tactical fighter force inventory requirements across the Department.

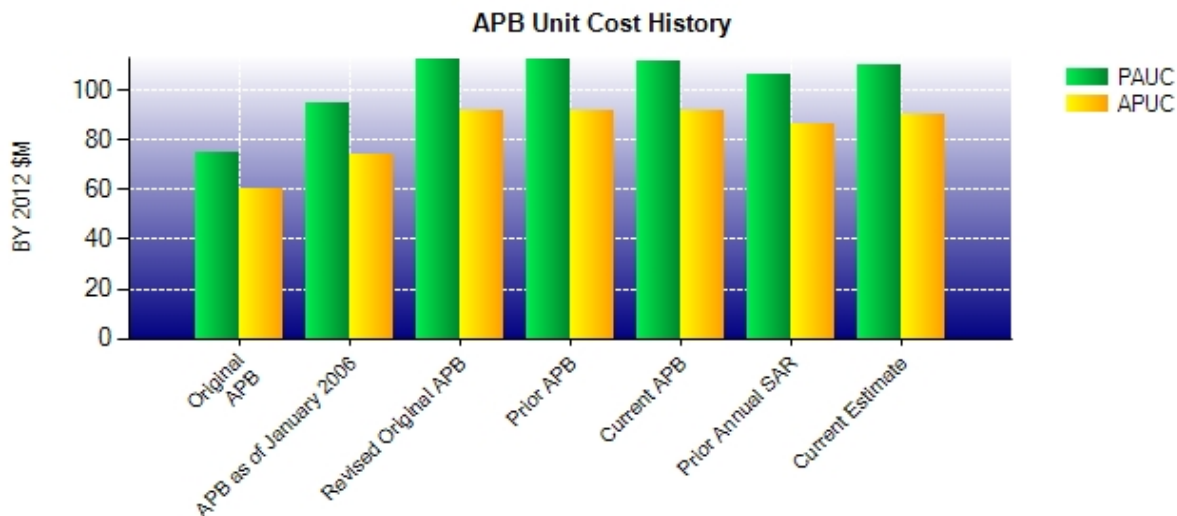
F-35A (Conventional Take Off and Landing) URF - \$67.7M (BY 2012)

F-35

December 2016 SAR

F-35B (Short Takeoff and Vertical Landing) URF - \$77.1M (BY 2012)

F-35C (Carrier Variant) URF - \$78.1M (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 2015	106.537	86.488	129.585	110.695
Current Estimate	Dec 2016	109.950	89.926	138.495	119.608

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	0.502	-0.222	8.678	1.055	-3.947	0.000	-2.636	3.430	138.495

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	0.491	-0.121	8.727	1.061	-3.596	0.000	-2.651	3.911	119.608

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	342081.9
Total Quantity	N/A	2457	N/A	2470
PAUC	N/A	135.065	N/A	138.495

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	BY 2012 \$M	% Change
	Current UCR Baseline (Jun 2014 APB)	Current Estimate (Dec 2016 SAR)	
Program Acquisition Unit Cost			
Cost	55273.5	53043.2	
Quantity	2457	2470	
Unit Cost	22.496	21.475	-4.54
Average Procurement Unit Cost			
Cost	42332.9	39918.1	
Quantity	2443	2456	
Unit Cost	17.328	16.253	-6.20

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 \$M	BY 2012 \$M	% Change
	Original UCR Baseline (Mar 2012 APB)	Current Estimate (Dec 2016 SAR)	
Program Acquisition Unit Cost			
Cost	53916.4	53043.2	
Quantity	2458	2470	
Unit Cost	21.935	21.475	-2.10
Average Procurement Unit Cost			
Cost	42332.9	39918.1	
Quantity	2443	2456	
Unit Cost	17.328	16.253	-6.20

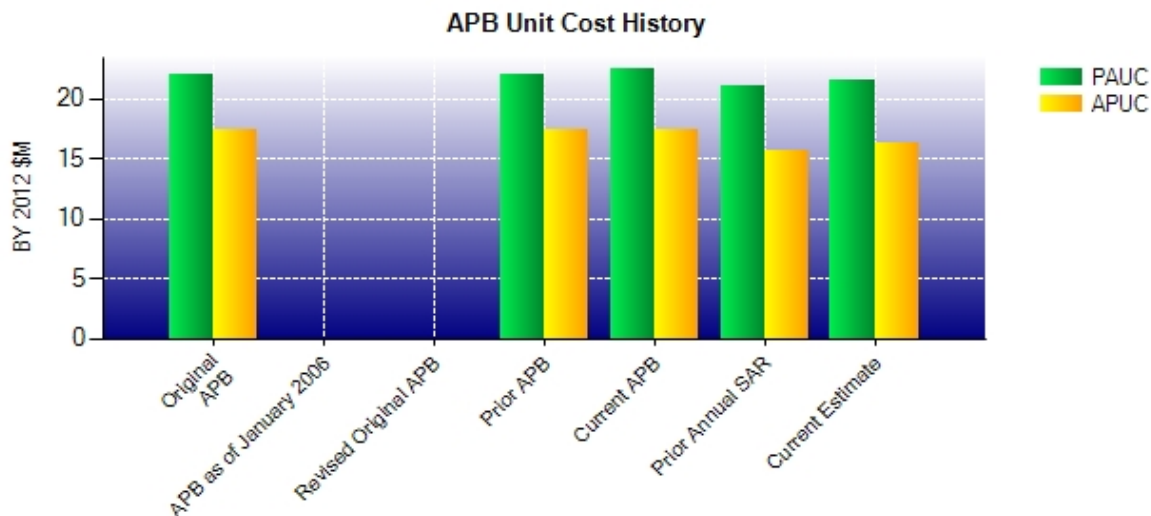
The DoD average F-35 Engine Unit Recurring Flyaway (URF) Cost consists of the Hardware (Propulsion and Engineering Change Order) costs over the life of the program. The URF assumes the quantity benefits of 132 FMS engines and 609 International Partner engines.

The current estimate for F-35 total procurement quantity increased from 2443 to 2456. This is the result of an increase of 13 F-35B aircraft to be procured by the United States Marine Corps (USMC). The increase is reflected in both the aircraft and engine subprogram and results in a change from 680 to 693 in the Department of Navy Aircraft Procurement accounts. The USMC validated this requirement through the Marine Corps Requirements Oversight Council (MROC). The additional aircraft are fully funded and the funding is reflected in the FY 2018 President's Budget submission. The additional aircraft were added after the completion of the congressionally directed Department-wide fighter mix study. The strategic review will assess future tactical fighter force inventory requirements across the Department.

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

F-35B (Short Takeoff and Vertical Landing) URF - \$26.7M (BY 2012)

F-35C (Carrier Variant) URF - \$11.0M (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 2015	20.960	15.709	24.685	19.930
Current Estimate	Dec 2016	21.475	16.253	26.072	21.349

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	0.083	-0.047	0.961	0.000	0.060	0.000	-0.975	0.082	26.072

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	0.077	-0.025	0.967	0.000	-0.398	0.000	-0.980	-0.359	21.349

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	64399.0
Total Quantity	N/A	2457	N/A	2470
PAUC	N/A	25.990	N/A	26.072

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	-12.1	+1043.6	+4.3	+1035.8
Quantity	--	--	--	--
Schedule	--	+3912.7	--	+3912.7
Engineering	--	+1826.8	--	+1826.8
Estimating	-1227.9	-9221.5	-8.3	-10457.7
Other	--	--	--	--
Support	--	-9781.9	--	-9781.9
Subtotal	-1240.0	-12220.3	-4.0	-13464.3
Current Changes				
Economic	+2.5	+163.3	+39.0	+204.8
Quantity	--	+1204.0	--	+1204.0
Schedule	--	+17521.7	--	+17521.7
Engineering	--	+779.8	--	+779.8
Estimating	+357.7	+389.7	-38.9	+708.5
Other	--	--	--	--
Support	--	+3272.2	--	+3272.2
Subtotal	+360.2	+23330.7	+0.1	+23691.0
Total Changes	-879.8	+11110.4	-3.9	+10226.7
Current Estimate	43530.3	293758.2	4793.4	342081.9

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	--	--	--	--
Schedule	--	--	--	--
Engineering	--	+1346.4	--	+1346.4
Estimating	-1613.5	-6467.3	-66.6	-8147.4
Other	--	--	--	--
Support	--	-7921.1	--	-7921.1
Subtotal	-1613.5	-13042.0	-66.6	-14722.1
Current Changes				
Economic	--	--	--	--
Quantity	--	+817.9	--	+817.9
Schedule	--	+6387.1	--	+6387.1
Engineering	--	+575.6	--	+575.6
Estimating	+317.0	-624.3	-67.3	-374.6
Other	--	--	--	--
Support	--	+2410.5	--	+2410.5
Subtotal	+317.0	+9566.8	-67.3	+9816.5
Total Changes	-1296.5	-3475.2	-133.9	-4905.6
Current Estimate	46685.6	220857.7	4034.1	271577.4

Previous Estimate: December 2015

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+2.5
Adjustment for current and prior escalation. (Estimating)	-1.9	-2.0
Revised estimate for Small Business Innovation Research (SBIR) in FY 2015 and FY 2016 (AF). (Estimating)	-34.1	-36.2
Additional funding for the Air Vehicle and Test program as a result of realignment of Procurement funding to RDTE (AF). (Estimating)	+186.3	+209.4
Revised estimate due to application of new outyear inflation indices (AF). (Estimating)	-0.6	-0.7
Revised estimate for SBIR in FY 2016 (Navy). (Estimating)	-29.0	-31.1
Additional funding for the Air Vehicle and Test program as a result of realigning close out System Development and Demonstration procurement funding to RDTE (Navy). (Estimating)	+194.8	+219.7
Revised estimate due to application of new outyear inflation indices (Navy). (Estimating)	+1.2	0.0
Revised estimate due to application of new outyear inflation indices (Non-Treasury Funds). (Estimating)	+0.5	+0.5
Realignment of cost between the Aircraft subprogram and the Engine subprogram (AF). (Estimating)	-23.8	-26.6
Realignment of cost between the Aircraft subprogram and the Engine subprogram (Navy). (Estimating)	+23.6	+24.7
Revised estimate due to realignment of program funding and actual funding investment (AF). (Estimating)	0.0	0.0
RDT&E Subtotal	+317.0	+360.2

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+163.3
Total Quantity variance resulting from an increase of 13 F-35Bs from 680 to 693 (APN). (Subtotal)	+777.7	+1144.8
Quantity variance resulting from an increase of 13 F-35Bs from 680 to 693 (APN). (Quantity)	(+817.9)	(+1204.0)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+13.7)	(+20.2)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+6.4)	(+9.4)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-60.3)	(-88.8)
Stretch-out of procurement buy profile in FY 2017 to FY 2044 (Aircraft Procurement, AF) (APAF). (Schedule)	0.0	+6983.3
Additional schedule variance for U.S. procurement quantity profile adjustments (APAF). (Schedule)	+5653.6	+9537.2
Stretch-out of procurement buy profile in FY 2017 to FY 2032 (Aircraft Procurement, Navy) (APN). (Schedule)	0.0	-19.3
Additional schedule variance for U.S. procurement quantity profile adjustments (APN). (Schedule)	+719.8	+1000.3
Added funding for Disruptive Technology Innovation Partnership (DTIP) requirements (APAF). (Engineering)	+405.2	+561.6
Added funding for DTIP requirements (APN). (Engineering)	+164.0	+208.8

Adjustment for current and prior escalation. (Estimating)	-19.2	-21.0
Revised estimate for International procurement quantity profile adjustments (APAF). (Estimating) (QR)	-60.4	-117.1
Revised estimate for International procurement quantity profile adjustments (APN). (Estimating) (QR)	-15.5	-51.6
Additional funding due to revised estimating assumptions (APAF). (Estimating)	+1058.7	+1491.2
Additional funding due to revised estimating assumptions (APN). (Estimating)	+445.8	+581.1
Revised estimate of Airframe cost due to the incorporation of the latest prime and subcontractor actuals and labor/exchange rates (APAF). (Estimating)	-1893.5	-1491.9
Revised estimate of Airframe cost due to the incorporation of the latest prime and subcontractor actuals and labor/exchange rates (APN). (Estimating)	-1189.2	-1383.6
Revised estimate of non-recurring costs due to Diminishing Manufacturing Sources (DMS) and Ancillary (APAF). (Estimating)	+863.6	+1132.8
Revised estimate of non-recurring costs due to DMS and Ancillary (APN). (Estimating)	+384.4	+487.1
Update for fact of life changes for prior years/lots FY 2006-2016 (APAF). (Estimating)	-77.5	-82.8
Update for fact of life changes for prior years/lots FY 2006-2016 (APN). (Estimating)	-61.2	-65.7
Adjustment for current and prior escalation. (Support)	-3.2	-3.3
Increase in Other Support due to Manpower Full Time Equivalent Heads (FTE) and associated rates updated (APAF). (Support)	+987.1	+1395.2
Increase in Other Support due to Manpower FTE and associated rates updated (APN). (Support)	+1131.0	+1559.3
Increase in Initial Spares due to estimating methodology update to reflect the actual demand data from executed flight hours (APAF). (Support)	+149.9	+187.3
Increase in Initial Spares due to estimating methodology update to reflect the actual demand data from executed flight hours (APN). (Support)	+145.7	+133.7
Procurement Subtotal	+9566.8	+23330.7

(QR) Quantity Related

MILCON	\$M	
	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+39.0
Adjustment for current and prior escalation. (Estimating)	-11.1	-12.4
Revised estimate as a result of refined requirements (Navy). (Estimating)	-68.9	-11.4
Refined estimate as a result of refined requirements (AF). (Estimating)	+12.7	-15.1
MILCON Subtotal	-67.3	+0.1

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	+16.5	+116.2	--	+132.7
Quantity	--	--	--	--
Schedule	--	+744.1	--	+744.1
Engineering	--	--	--	--
Estimating	+1122.7	-2353.0	--	-1230.3
Other	--	--	--	--
Support	--	-2852.0	--	-2852.0
Subtotal	+1139.2	-4344.7	--	-3205.5
Current Changes				
Economic	+0.1	+72.7	--	+72.8
Quantity	--	+221.3	--	+221.3
Schedule	--	+1630.3	--	+1630.3
Engineering	--	--	--	--
Estimating	+3.8	+1375.8	--	+1379.6
Other	--	--	--	--
Support	--	+443.9	--	+443.9
Subtotal	+3.9	+3744.0	--	+3747.9
Total Changes	+1143.1	-600.7	--	+542.4
Current Estimate	11966.8	52432.2	--	64399.0

Summary BY 2012 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	11695.2	42332.9	--	54028.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+1427.4	-1781.7	--	-354.3
Other	--	--	--	--
Support	--	-2174.3	--	-2174.3
Subtotal	+1427.4	-3956.0	--	-2528.6
Current Changes				
Economic	--	--	--	--
Quantity	--	+150.3	--	+150.3
Schedule	--	+266.3	--	+266.3
Engineering	--	--	--	--
Estimating	+2.5	+778.7	--	+781.2
Other	--	--	--	--
Support	--	+345.9	--	+345.9
Subtotal	+2.5	+1541.2	--	+1543.7
Total Changes	+1429.9	-2414.8	--	-984.9
Current Estimate	13125.1	39918.1	--	53043.2

Previous Estimate: December 2015

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for current and prior escalation. (Estimating)	-0.1	-0.1
Realignment of cost between the Aircraft subprogram and Engine subprogram (AF). (Estimating)	+23.9	+26.6
Realignment of cost between the Aircraft subprogram and Engine subprogram (Navy). (Estimating)	-23.5	-24.7
Revised estimate due to application of new outyear inflation indices (Non-Treasury Funds). (Estimating)	+2.2	+2.0
RDT&E Subtotal	+2.5	+3.9

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+72.7
Total Quantity variance resulting from an increase of 13 F-35Bs from 680 to 693 (APN). (Subtotal)	+140.5	+206.8
Quantity variance resulting from an increase of 13 F-35Bs from 680 to 693 (APN). (Quantity)	(+150.3)	(+221.3)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+4.6)	(+6.7)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-14.4)	(-21.2)
Stretch-out of procurement buy profile in FY 2017 to FY 2044 (Engine Procurement, AF) (APAF). (Schedule)	0.0	+1258.5
Stretch-out of procurement buy profile in FY 2017 to FY 2044 (Engine Procurement, Navy) (APN). (Schedule)	0.0	-3.1
Additional schedule variance for U.S. procurement quantity profile adjustments (Engine Procurement, AF). (Schedule)	+209.9	+302.4
Additional schedule variance for U.S. procurement quantity profile adjustments (Engine Procurement, Navy). (Schedule)	+51.8	+65.8
Adjustment for current and prior escalation. (Estimating)	-3.4	-3.3
Revised estimate for International procurement quantity adjustments (Engine Procurement, AF). (Estimating) (QR)	+1.0	-2.3
Revised estimate for International procurement quantity adjustments (Engine Procurement, Navy). (Estimating) (QR)	+7.0	+5.7
Additional funding due to revised estimating assumptions (Engine Procurement, AF). (Estimating)	+24.3	+30.5
Additional funding due to revised estimating assumptions (Engine Procurement, Navy). (Estimating)	+25.4	+31.6
Revised estimate due to the incorporation of the latest actuals (Engine Procurement, AF). (Estimating)	+764.9	+1241.4
Revised estimate due to the incorporation of the latest actuals (Engine Procurement, Navy). (Estimating)	-26.1	+93.6
Update for fact of life changes for prior years/lots FY 2006-2016 (Engine Procurement, AF). (Estimating)	+0.1	-0.1
Update for fact of life changes for prior years/lots FY 2006-2016 (Engine Procurement,	-0.1	-0.1

Navy). (Estimating)		
Adjustment for current and prior escalation. (Support)	-0.9	-1.3
Increase in Other Support due to Manpower FTE and associated rates updated (APAF). (Support)	+108.3	+153.7
Increase in Other Support. Manpower FTE and associated rates updated (APN). (Support)	+125.6	+173.7
Increase in Initial Spares due to estimating methodology update to reflect the actual demand data from executed flight hours (APAF). (Support)	+64.5	+81.0
Increase in Initial Spares due to estimating methodology update to reflect the actual demand data from executed flight hours (APN). (Support)	+48.4	+36.8
Procurement Subtotal	+1541.2	+3744.0
(QR) Quantity Related		

Contracts

General Notes

The F135 LRIP 8 Engine contract no longer meets the threshold for the six largest contracts.

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 6
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
 Ft. Worth, TX 76108
Contract Number: N00019-11-C-0083
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: December 28, 2012
Definitization Date: September 27, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
4392.1	N/A	36	7270.5	N/A	36	7111.0	7270.5

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of Production Non-Recurring, Annualized Sustainment, Non-Annualized Sustainment, Depot, and Spares scope.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2016)	-81.0	-182.0
Previous Cumulative Variances	-131.2	-203.4
Net Change	+50.2	+21.4

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to underruns experienced by Lockheed Martin Rotary and Mission Systems in the areas of Autonomic Logistics Information Systems (ALIS) manpower, Support Equipment, and Training Systems. These underruns are due to multiple reasons: reduced staffing levels, favorable negotiations with suppliers, realized efficiencies, and bulk purchase strategies across the multiple ongoing Sustainment contracts.

The favorable net change in the schedule variance is due to schedule recovery for previous tooling delays.

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.

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

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 7
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
 Ft. Worth, TX 76108
Contract Number: N00019-12-C-0004
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: September 27, 2013
Definitization Date: September 27, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
4447.1	N/A	35	5657.9	N/A	35	5533.1	5657.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of Tech Assist, Non-Annualized Sustainment and Depot scope.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2016)	-14.0	-73.0
Previous Cumulative Variances	-78.6	-84.8
Net Change	+64.6	+11.8

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to Repair or Replenishment (RoR) orders being negotiated at lower rates than previously anticipated by the Contractor. Along with this improved cost variance, there were also underruns experienced primarily due to Lockheed Martin Rotary & Mission Systems (RMS) on Support Equipment deliveries and Autonomic Logistics Information Systems (ALIS) manpower and kits.

The favorable net change in the schedule variance is due to The unfavorable net change in the schedule variance is due to Support Equipment deliveries not completing within the Section F Period of Performance end date November 2016.

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.

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

Contract Identification

Appropriation: Procurement
Contract Name: F-35 LRIP 8
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
 Ft Worth, TX 76108
Contract Number: N00019-13-C-0008
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Incentive Fee (CPIF)
Award Date: February 28, 2013
Definitization Date: November 21, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
5153.5	N/A	43	5201.1	N/A	43	5187.9	5201.1

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to authorization of Reprogramming Center West Prime Mission Equipment.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2016)	-85.0	-239.0
Previous Cumulative Variances	-65.0	-136.1
Net Change	-20.0	-102.9

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to part shortages driving out-of-station work and assembly labor inefficiencies as well as overruns within quality labor and material allocations.

The unfavorable net change in the schedule variance is due to late spares and Mission Systems tool deliveries.

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, 42 of 43 aircraft have been delivered. The final jet is projected to deliver in June 2017.

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

Contract Identification

Appropriation: Procurement
Contract Name: FY15 Annualized Sustainment
Contractor: Lockheed Martin
Contractor Location: 1 Lockheed Boulevard
 Ft Worth, TX 76108
Contract Number: N00019-15-C-0031
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: October 28, 2014
Definitization Date: November 01, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
704.0	N/A	N/A	1810.6	N/A	N/A	1537.8	1810.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of non-annualized Sustainment effort and extension of FY 2015 annualized Sustainment Period of Performance.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2016)	+90.0	-68.0
Previous Cumulative Variances	-65.0	-136.1
Net Change	+155.0	+68.1

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to correction to the Repair or Replenishment (RoR) activities so that appropriate performance could be taken. Along with this improved cost variance, there were also underruns experienced primarily due to Lockheed Martin Rotary & Mission Systems (RMS) (reduced staffing levels, favorable negotiations with suppliers, realized efficiencies, and bulk purchase strategies across the multiple ongoing Sustainment contracts).

The favorable net change in the schedule variance is due to correction to the RoR activities so that appropriate performance could be taken. This is partially offset by delays to Autonomic Logistics Information Systems 2.0.2 software release activities.

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.

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: November 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	6650.5	N/A	57	6847.8	6650.5

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 Non-Recurring Tooling.

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (12/31/2016)	-51.0		-118.0
Previous Cumulative Variances	--		--
Net Change	-51.0		-118.0

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to unbudgeted long lead hardware driving false variances.

The unfavorable cumulative schedule variance is due to Mission Systems tooling delays and Radar performing behind schedule due to late supplier turn on.

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 Undefined Contract Action Integrated Program Management Report submittal was received in month-end May 2016. To date, 17 of 57 aircraft have been delivered. The final jet is projected to deliver in December 2017.

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: January 06, 2012
Definitization Date: February 15, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
370.6	N/A	102	2136.3	N/A	102	2123.0	2136.3

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 Sustainment work scope.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2016)	-43.0	-51.0
Previous Cumulative Variances	--	--
Net Change	-43.0	-51.0

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to the engine hardware is costing more than planned due primarily to the contractor agreeing to engine cost targets based on their original cost curve commitment that is not achievable today due to delays with incorporating enough engineering changes and affordability initiatives to lower the manufacturing costs; and the supply chain team being unable to negotiate lower pricing from the supply base. Additionally, re-work required with Autonomic Logistic Information System (ALIS) software and additional planning & management resources in Fleet Management Services; and a retroactive rate adjustment for the 2016 General and Administrative rates.

The unfavorable cumulative schedule variance is due to late Fan engine hardware deliveries being managed by supply chain buyers who are managing on-hand inventory levels, late Turbine Exhaust Cases due to part complexity and Nozzle divergent flaps due to quality non-conformances, suppliers yield issues and coating operations delays.

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.

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	192	187	2456	7.61%
Total Program Quantity Delivered	206	201	2470	8.14%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	342081.9	Years Appropriated	24
Expended to Date	75460.8	Percent Years Appropriated	47.06%
Percent Expended	22.06%	Appropriated to Date	100978.1
Total Funding Years	51	Percent Appropriated	29.52%

The above data is current as of May 23, 2016.

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	192	187	2456	7.61%
Total Program Quantity Delivered	206	201	2470	8.14%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	64399.0	Years Appropriated	24
Expended to Date	18158.5	Percent Years Appropriated	47.06%
Percent Expended	28.20%	Appropriated to Date	21601.7
Total Funding Years	51	Percent Appropriated	33.54%

The above data is current as of May 23, 2016.

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 2,457 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	8.470	10.042
Unit Operations	4.923	5.632
Maintenance	11.126	5.501
Sustaining Support	3.179	2.075
Continuing System Improvements	2.108	2.291
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	29.806	25.541

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 CTOL @ 250 hrs./yr.; F-35B STOVL @ 302 hrs./yr.; and F-35C CV @ 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.

Not included in the CAPE ICE are the intermediate maintenance costs for the Marine Corps as observed with the operational squadron at Marine Corps Air Station Yuma. Although the program of record (POR) acknowledges only unit and depot levels of maintenance, it appears that the Department of Navy (DoN) is moving towards incorporating some form of intermediate maintenance for its squadrons. However, the DoN has not made the decision to change the POR at this point. While the extent of the additional maintenance level is currently unclear, a change in F-35 maintenance

strategy appears to be likely for at least the DoN. CAPE recommends that the Services develop business case analyses to determine the impact of intermediate maintenance levels on the respective F-35 variants, in terms of both cost and readiness.

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 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 Cost War Room (CWR) and Reliability and Maintainability Improvement Program (RMIP). Concurrent to CWR 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 CWR affordability initiatives, requirement refinement, and improved cost data quality, the program has reduced the program's annual cost per flight hour.

The O&S POE is captured in the 2016 Annual Cost Estimate (ACE) of \$602.3B BY 2012\$ (\$1.061 Trillion TY\$) and has been updated to reflect the latest technical baseline for the program and incorporates revised stakeholder requirements. Primary updates to the 2016 POE include service requirements, JP-5 and JP-8 fuel prices and consumption, and depot-level repairable (DLR) costs.

The CAPE estimate does not incorporate the program office updates to the 2016 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.

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 2015 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

Antecedent Information

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 2015 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):