Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-439

Small Diameter Bomb Increment II (SDB II)

As of FY 2016 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

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

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

Program Information

Program Name

Small Diameter Bomb Increment II (SDB II)

DoD Component

Air Force

Joint Participants

Department of the Navy

Responsible Office

Col Kevin Hickman
102 West D Ave
Eglin Air Force Base, FL 32542

kevin.hickman@us.af.mil

Phone: 850-883-2881
Fax: 850-882-2438
DSN Phone: 875-2881
DSN Fax: 872-2438
Date Assigned: June 16, 2014

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 8, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 8, 2010

Mission and Description

Small Diameter Bomb Increment II (SDB II) is a joint interest United States Air Force (USAF) and Department of the Navy (DoN) ACAT ID program, with the USAF as the lead service. SDB II provides the warfighter the capability to attack mobile targets from stand-off, through weather. The threshold aircraft for the USAF is the F-15E and the threshold aircraft for the DoN are the F-35B and F-35C. Objective aircraft include the F-16, F/A-18E/F, F-22A, F-35A, B-1B, B-2, B-52, A-10, and MQ -9. SDB II will be compatible with the Bomb Rack Unit (BRU-61/A) and the Joint Miniature Munitions BRU (BRU-61A/A) miniature munitions carriages, the CNU-660/E carriage system, the Common Munitions Bit and Reprogramming Equipment and the Joint Mission Planning System. The SDB II Program will develop and field a single USAF weapon storage container and a dual DoN weapon storage container.

Executive Summary

In 2014, SDB II made significant progress toward a Functional Configuration Audit (FCA), Production Readiness Review (PRR), and System Verification Review (SVR), and is preparing for Milestone (MS) C in the 3rd Quarter of FY 2015. The program is nearly complete in satisfying MS C Exit Criteria: subsystem and system qualification, reliability growth testing, and developmental flight testing; MS C documentation and System Qualification are nearly complete; Test, Analyze, and Fix (TAAF) reliability for this phase of testing is complete; required Captive Flight Testing (CFT) is complete; required Guided Test Vehicle (GTV) flight testing is complete; and both Live Fire (LF) flight tests are complete. In addition to MS C Exit Criteria, SDB II also completed important performance verification events such as Mission Planning modules; a logistics demonstration of the Air Force container; a U.S. Air Force Independent Logistics Assessment; and additional flight testing.

Specific accomplishments that are evidence of SDB II preparedness for MS C and Lot 1 production are: SDB II has nearly completed All Up Round System Qualification, specifically Climatic, Dynamic, Hazards of Electromagnetic Radiation to Ordnance, and Electromagnetic Environmental Effects. To complete System Qualification, SDB II must pass the corrosive atmosphere tests and post-corrosive tests inspection. An out-of-container Insensitive Munitions (IM) Fast Cook-Off test was completed on May 22, 2014. SDB II completed the MS C Exit Criteria for TAAF free flight reliability testing demonstrating a 253 hours Mean Time Between Failure, exceeding the 250-hour requirement for MS C. SDB II has nearly completed a rigorous developmental flight testing program to meet MS C Exit Criteria. The following specific flights were successfully accomplished: GTVs-6/7/9/10, and LF-1. GTV-7 was the first flight test in DoD history to autonomously classify a target. Two Engineering GTVs were flown to verify resolution of the data link issue. Performance verification, including Verification and Validation of the Integrated Flight Simulation (IFS), continues and results from flight tests are being used to demonstrate that the IFS accurately predicts system performance.

In addition to these MS C Exit Criteria events, SDB II achieved 428 flight hours of CFT of the multi-mode seeker and weapon datalink with no reliability issues. The SDB II team accomplished Mission Planning modules to support the four Cueing Missions that occurred from May 2014 to June 2014. An independent manufacturing readiness assessment was conducted and determined SDB II is at a Manufacturing Readiness Level of 8. SDB II continues to make progress on F-35 Risk Reduction efforts with a Universal Armament Interface contract award in 2014.

In June 2014, SDB II conducted corrosive atmosphere environmental testing. The test item failed to pass the test. A corrective action plan was developed to address identified issues. Raytheon Missile Systems implemented design changes and is following the plan to verify the corrective actions by September 2015.

In 2014, SDB II made significant progress in accomplishing IM compliance; the remainder of IM testing continues with Sympathetic Detonation testing (Confined/Unconfined) scheduled for 2nd Quarter FY 2015. The program has a clear path and closure plans for all open actions. In 2015 SDB II anticipates completing FCA, PRR, MS C documentation, MS C, and twelve additional developmental flight tests.

SDB II is following an event driven schedule. Flight test failures, time for subsequent successful retests, and delays in Environmental Qualification testing have resulted in the SVR date moving from June 2014 to March 2015. The SDB II program office will conduct MS C no later than 60 days after close out or mutual agreement of disposition of all SVR action items. Based on this, the SDB II PM’s estimate for MS C is 3rd Quarter FY 2015 (APB breach). The SDB II PM's estimate for F-15E Required Assets Available remains in July 2017 (APB breach) and the F-35B and F-35C initial fielding estimates remain in March 2022 to account for changes in the fielding schedules of the F-35B and F-35C Follow-on Development Block 4 Operational Flight Program.

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

Threshold Breaches

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

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

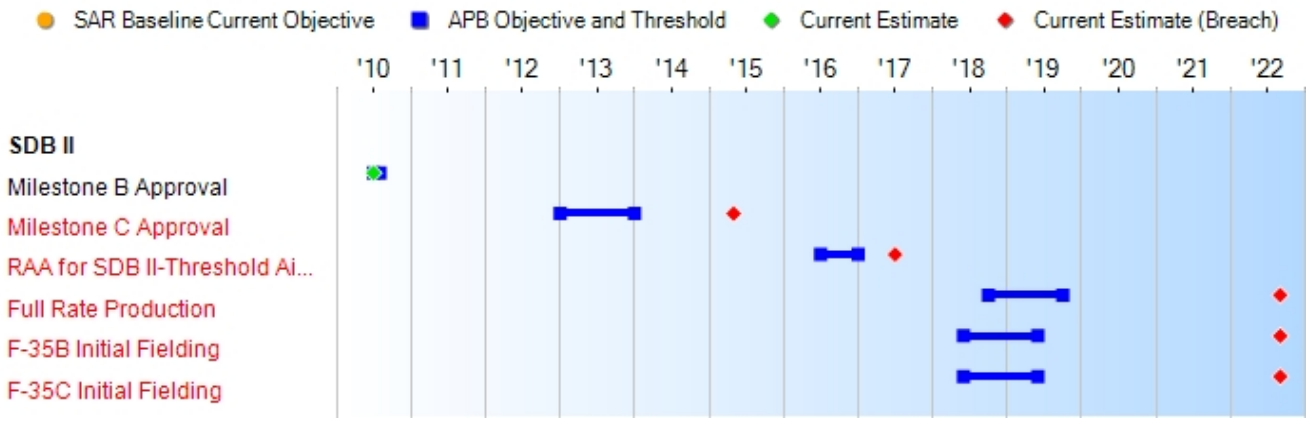
Explanation of Breach

The F-15 Required Assets Available (RAA) APB breach was discussed in the Program Deviation Report submitted in December 2013. F-15 RAA has moved from January 2017 to July 2017 resulting in an APB breach.

The schedule breaches to FRP, F-35B Initial Fielding, and F-35C Initial Fielding were first reported in the December 2011 SAR. The schedule breach to Milestone (MS) C was first reported in the December 2012 SAR. These schedule breaches are updated in this December 2014 SAR to reflect fact-of-life changes.

Resolution of all breaches will be addressed at MS C, projected for 3rd Quarter FY 2015.

Schedule



Schedule Events					
Events	**SAR Baseline Development Estimate**	**Current APB Development Objective/Threshold**		**Current Estimate**	
Milestone B Approval	Jul 2010	Jul 2010	Aug 2010	Jul 2010	
Milestone C Approval	Jan 2013	Jan 2013	Jan 2014	**May 2015**[1]	(Ch-1)
RAA for SDB II-Threshold Aircraft F-15E	Jul 2016	Jul 2016	Jan 2017	**Jul 2017**[1]	
Full Rate Production	Oct 2018	Oct 2018	Oct 2019	**Sep 2022**[1]	(Ch-2)
F-35B Initial Fielding	Jun 2018	Jun 2018	Jun 2019	**Sep 2022**[1]	(Ch-2)
F-35C Initial Fielding	Jun 2018	Jun 2018	Jun 2019	**Sep 2022**[1]	(Ch-2)

[1] *APB Breach*

Change Explanations

(Ch-1) The PM's current estimate for Milestone C changed from September 2014 to no earlier than November 2014 to 3rd Quarter FY 2015 (APB breach) due to flight test failures, time for subsequent successful retests, and delays in Environmental Qualification testing.
(Ch-2) The current estimate for FRP, F-35B and F-35C initial fielding changed from March 2020 to September 2022 due to changes in the F-35B and F-35C fielding schedules.

Notes

SDB II RAA is defined as the capability to arm twelve F-15Es with two fully loaded Bomb Rack Units (BRU-61) carriage systems each for 1.5 sorties, which equates to 144 weapons. RAA include associated spares, support equipment (including load crew trainers), initial training, mission planning capability, and verified technical orders. The ACC Commander, or applicable Major Command Commander (if first operational unit is not within ACC, will declare IOC for the Air Force at the first designated SDB II capable wing based on the wing or group commander's recommendations). The weapon configuration delivered to meet the F-15E RAA will include fully qualified hardware functionality for all required

employment modes.

The Department of the Navy (DoN) first unit equipped will be an F/A-18E/F squadron. OSD authorized a Resource Management Decision reinstating DoN funding for F/A-18 E/F integration in advance of the F-35B and F-35C threshold aircraft. The quantity of SDB II weapons required for F-35 Initial Fielding is 90 weapons and 22 carriage systems based upon a ten plane squadron with two fully loaded carriage systems each plus ten spare weapons.

Acronyms and Abbreviations

ACC - Air Combat Command
RAA - Required Assets Available

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Scenario Weapon Effectiveness (WE)				
Given SDB II weapon delivery from an objective platform employing self targeting or an SDB II weapon delivery from a threshold or objective aircraft with third party targeting via an objective airborne platform (Paragraph 6.2.3.1.2 of CDD for SDB II dated July 28, 2009), the SDB II weapon will achieve a minimum PSSK of (OB 1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009.	Given SDB II weapon delivery from an objective platform employing self targeting or an SDB II weapon delivery from a threshold or objective aircraft with third party targeting via an objective airborne platform (Paragraph 6.2.3.1.2 of CDD for SDB II dated July 28, 2009), the SDB II weapon will achieve a minimum PSSK of (OB 1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009.	Given SDB II weapon delivery from a threshold aircraft employing self targeting or a threshold aircraft delivering SDB II with third party targeting via a JTAC, the SDB II weapon will achieve a minimum PSSK of (TH 1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009.	TBD	Given SDB II weapon delivery from a threshold aircraft employing self targeting or a threshold aircraft delivering SDB II with third party targeting via a JTAC, the SDB II weapon will achieve a minimum PSSK of (TH 1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009.
Weapon Loadout				
Four SDB II weapons integrated onto the BRU-61/A. Aircraft will be able to carry and employ both SDB I and II weapons loaded on separate BRU-61/As during the same mission.	Four SDB II weapons integrated onto the BRU-61/A. Aircraft will be able to carry and employ both SDB I and II weapons loaded on separate BRU-61/As during the same mission.	Four SDB II weapons integrated onto the BRU-61/A. Aircraft will be able to carry and employ both SDB I and II weapons loaded on separate BRU-61/As during the same mission.	TBD	Four SDB II weapons integrated onto the BRU-61/A. Aircraft will be able to carry and employ both SDB I and SDB II weapons loaded on separate BRU-61/As during the same mission.
Carrier Operability (Navy Unique Requirement)				
SDB II will be compatible with carrier operations without degrading other naval operations. Compatibility includes being capable of at least fifty catapult launches and forty-nine	SDB II will be compatible with carrier operations without degrading other naval operations. Compatibility includes being capable of at least fifty catapult launches and forty-	SDB II will be compatible with carrier operations without degrading other naval operations. Compatibility includes being capable of at least fifty catapult launches and forty-	TBD	SDB II will be compatible with carrier operations without degrading other naval operations. Compatibility includes being capable of at least fifty catapult launches and forty-nine arrested landings; able to be

arrested landings; able to be transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere, mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contamin -ation, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.	nine arrested landings; able to be transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere, mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contamin-ation, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.	nine arrested landings; able to be transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere, mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contamin-ation, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.		transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere, mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contamination, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenishment ship operations.
Materiel Availability				
Once 3,000 SDB II weapons are in the inventory, the Materiel Availability for SDB II will be no less than .95.	Once 3,000 SDB II weapons are in the inventory, the Materiel Availability for SDB II will be no less than .95.	The Materiel Availability for SDB II will follow this graduated scale: Greater than 500 weapons in inventory - no less than .75 Greater than 1000 weapons in inventory - no less than .80 Greater than 3000 weapons in inventory - no less than .90.	TBD	The Materiel Availability for SDB II will follow this graduated scale: Greater than 500 weapons in inventory - no less than .75 Greater than 1000 weapons in inventory - no less than .80 Greater than 3000 weapons in inventory - no less than .90.
Net Ready				
The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must	The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and	The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated	TBD	The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical

satisfy the technical requirements for transition to Net-Centric military operations to include 1) Solutions architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP comm-unications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implement-ation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Specturm and JTRS require-ments.	must satisfy the technical requirements for transition to Net-Centric military operations to include 1) Solutions architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP comm-unications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implement-ation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Specturm and JTRS require-ments.	DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solutions architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP comm-unications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implement-ation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an IATO or ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Specturm and JTRS require-ments.		requirements for transition to Net-Centric military operations to include 1) Solutions architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and nonrepudiation, and issuance of an IATO or ATO by the DAA, and 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements.
Weapon Effectiveness				
Given meeting the	Given meeting the	SDB II will achieve a	TBD	SDB II will achieve a

threshold of WE the SDB II will achieve a minimum PSSK of (OB 3), when averaged over various environment-al/ threat condition cases listed in Appendix F of CDD for SDB II dated July 28, 2009.	threshold of WE the SDB II will achieve a minimum PSSK of (OB 3), when averaged over various environment-al/ threat condition cases listed in Appendix F of CDD for SDB II dated July 28, 2009.	minimum PSSK of (TH 3) for each target type (Table 6-1 of CDD for SDB II dated July 28, 2009) in each environment-al/ threat condition case listed in Appendix F of CDD for SDB II dated July 28, 2009.		minimum PSSK of (TH 3) for each target type (Table 6-1 of CDD for SDB II dated July 28, 2009) in each environ-mental/ threat condition case listed in Appendix F of CDD for SDB II dated July 28, 2009.

Requirements Reference

Miniature Munitions Capability (MMC) Operational Requirements Document (ORD) dated April 8, 2005 and Capability Development Document (CDD) dated July 28, 2009

Change Explanations

None

Notes

Regarding Scenario WE, threshold aircraft is defined as F-15E for the U.S. Air Force (USAF) and the F-35B and F-35C for Department of the Navy. Program schedule for the USAF will not be delayed due to availability of the F-35B and F-35C. Both targeting methods (threshold aircraft or Joint Terminal Attack Controller) must be employed in any combination to achieve an average over-the-target set.

Acronyms and Abbreviations

ATO - Authorization To Operate
BRU - Bomb Rack Unit
DAA - Designated Accrediting Authority
DoDAF - Department of Defense Architecture Framework
EMC - Electromagnetic Compatibility
EMI - Electromagnetic Interference
GESP - GIG Enterprise Service Profiles
GIG - Global Information Grid
i.e. - that is
IATO - Interim Approval to Operate
IEA - Information Enterprise Architecture
IP - Internet Protocol
IT - Information Technology
JROC - Joint Requirements Oversight Committee
JTAC - Joint Terminal Attack Controller
JTRS - Joint Tactical Radio System
OB - Objective
PSSK - Probability of Single Shot Kill
SAASM - Selective Availability / Anti-Spoofing Module
TH - Threshold
TV-1 - Technical View - 1

Track to Budget

RDT&E

Appn	BA	PE
Navy	05	0604329N

Project	Name
3072	Small Diameter Bomb

Appn	BA	PE
Air Force	05	0604329F

Project	Name
655191	Small Diameter Bomb Increment II

Procurement

Appn	BA	PE
Navy	02	0204162N

Line Item	Name
223800	Small Diameter Bomb II

Appn	BA	PE
Air Force	02	0207327F

Line Item	Name
SDB000	Small Diameter Bomb

Notes

This SAR reflects funding for SDB II efforts only.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2010 $M			BY 2010 $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	1601.2	1601.2	1761.3	1589.9	1665.0	1665.0	1700.4
Procurement	2976.3	2976.3	3273.9	2012.7	3545.4	3545.4	2559.1
Flyaway	--	--	--	1711.1	--	--	2183.4
Recurring	--	--	--	1711.1	--	--	2183.4
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	301.6	--	--	375.7
Other Support	--	--	--	301.6	--	--	375.7
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	4577.5	4577.5	N/A	3602.6	5210.4	5210.4	4259.5

Confidence Level

Confidence Level of cost estimate for current APB: 54%

The Milestone (MS) B cost estimate was established using a 54% confidence level. Prior to MS B, the program completed an extensive risk reduction phase that culminated in a successful Preliminary Design Review with all technology readiness level ratings at six or higher. The estimate provides sufficient resources to execute the program under normal conditions, encountering average levels of technical, schedule, and programmatic risk. It is consistent with average resource expenditures on historical efforts of similar size, scope, and complexity.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	163	163	163
Procurement	17000	17000	17000
Total	17163	17163	17163

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	1094.0	82.1	61.9	85.8	75.0	96.3	112.3	93.0	1700.4
Procurement	0.0	40.6	66.0	90.6	112.4	171.2	249.6	1828.7	2559.1
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 2016 Total	1094.0	122.7	127.9	176.4	187.4	267.5	361.9	1921.7	4259.5
PB 2015 Total	1134.3	168.3	185.5	257.1	245.3	328.0	453.1	1441.7	4213.3
Delta	-40.3	-45.6	-57.6	-80.7	-57.9	-60.5	-91.2	480.0	46.2

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	163	0	0	0	0	0	0	0	0	163
Production	0	0	144	250	312	550	1050	1650	13044	17000
PB 2016 Total	163	0	144	250	312	550	1050	1650	13044	17163
PB 2015 Total	163	144	246	458	651	1045	1668	2718	10070	17163
Delta	0	-144	-102	-208	-339	-495	-618	-1068	2974	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	24.7
2007	--	--	--	--	--	--	92.0
2008	--	--	--	--	--	--	139.6
2009	--	--	--	--	--	--	107.1
2010	--	--	--	--	--	--	126.5
2011	--	--	--	--	--	--	100.0
2012	--	--	--	--	--	--	138.8
2013	--	--	--	--	--	--	125.1
2014	--	--	--	--	--	--	109.6
2015	--	--	--	--	--	--	68.7
2016	--	--	--	--	--	--	32.6
2017	--	--	--	--	--	--	47.5
2018	--	--	--	--	--	--	15.4
2019	--	--	--	--	--	--	15.7
2020	--	--	--	--	--	--	6.5
Subtotal	136	--	--	--	--	--	1149.8

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2010 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	26.2
2007	--	--	--	--	--	--	95.2
2008	--	--	--	--	--	--	141.6
2009	--	--	--	--	--	--	107.2
2010	--	--	--	--	--	--	125.1
2011	--	--	--	--	--	--	97.0
2012	--	--	--	--	--	--	132.4
2013	--	--	--	--	--	--	117.3
2014	--	--	--	--	--	--	101.2
2015	--	--	--	--	--	--	62.6
2016	--	--	--	--	--	--	29.2
2017	--	--	--	--	--	--	41.8
2018	--	--	--	--	--	--	13.3
2019	--	--	--	--	--	--	13.3
2020	--	--	--	--	--	--	5.4
Subtotal	136	--	--	--	--	--	1108.8

Annual Funding 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
2005	--	--	--	--	--	--	8.8
2006	--	--	--	--	--	--	11.7
2007	--	--	--	--	--	--	9.7
2008	--	--	--	--	--	--	11.1
2009	--	--	--	--	--	--	15.8
2010	--	--	--	--	--	--	7.6
2011	--	--	--	--	--	--	13.4
2012	--	--	--	--	--	--	17.9
2013	--	--	--	--	--	--	16.6
2014	--	--	--	--	--	--	18.0
2015	--	--	--	--	--	--	13.4
2016	--	--	--	--	--	--	29.3
2017	--	--	--	--	--	--	38.3
2018	--	--	--	--	--	--	59.6
2019	--	--	--	--	--	--	80.6
2020	--	--	--	--	--	--	105.8
2021	--	--	--	--	--	--	56.1
2022	--	--	--	--	--	--	26.9
2023	--	--	--	--	--	--	10.0
Subtotal	27	--	--	--	--	--	550.6

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2010 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	9.6
2006	--	--	--	--	--	--	12.4
2007	--	--	--	--	--	--	10.0
2008	--	--	--	--	--	--	11.2
2009	--	--	--	--	--	--	15.8
2010	--	--	--	--	--	--	7.5
2011	--	--	--	--	--	--	12.9
2012	--	--	--	--	--	--	16.9
2013	--	--	--	--	--	--	15.5
2014	--	--	--	--	--	--	16.6
2015	--	--	--	--	--	--	12.2
2016	--	--	--	--	--	--	26.1
2017	--	--	--	--	--	--	33.5
2018	--	--	--	--	--	--	51.2
2019	--	--	--	--	--	--	67.9
2020	--	--	--	--	--	--	87.3
2021	--	--	--	--	--	--	45.4
2022	--	--	--	--	--	--	21.3
2023	--	--	--	--	--	--	7.8
Subtotal	27	--	--	--	--	--	481.1

Annual Funding 1507 | Procurement | Weapons 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
2018	90	10.9	0.4	--	11.3	8.7	20.0
2019	750	79.1	2.7	--	81.8	12.2	94.0
2020	750	88.0	2.7	--	90.7	4.3	95.0
2021	750	86.1	4.4	--	90.5	7.3	97.8
2022	750	89.9	4.9	--	94.8	6.0	100.8
2023	750	89.9	4.5	--	94.4	9.4	103.8
2024	750	89.9	5.0	--	94.9	12.0	106.9
2025	410	50.2	2.2	--	52.4	5.1	57.5
Subtotal	5000	584.0	26.8	--	610.8	65.0	675.8

Annual Funding 1507 | Procurement | Weapons Procurement, Navy							
Fiscal Year	Quantity	BY 2010 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2018	90	9.2	0.3	--	9.5	7.4	16.9
2019	750	65.5	2.2	--	67.7	10.1	77.8
2020	750	71.4	2.2	--	73.6	3.5	77.1
2021	750	68.5	3.5	--	72.0	5.8	77.8
2022	750	70.1	3.8	--	73.9	4.7	78.6
2023	750	68.7	3.4	--	72.1	7.3	79.4
2024	750	67.4	3.7	--	71.1	9.0	80.1
2025	410	36.9	1.6	--	38.5	3.8	42.3
Subtotal	5000	457.7	20.7	--	478.4	51.6	530.0

Cost Quantity Information 1507 | Procurement | Weapons Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2010 $M**
2018	90	9.1
2019	750	64.9
2020	750	70.8
2021	750	67.9
2022	750	69.5
2023	750	68.2
2024	750	66.8
2025	410	36.6
Subtotal	5000	453.8

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	144	34.4	5.4	--	39.8	0.8	40.6
2016	250	43.7	3.9	--	47.6	18.4	66.0
2017	312	55.3	4.9	--	60.2	30.4	90.6
2018	460	53.4	5.1	--	58.5	33.9	92.4
2019	300	30.7	2.9	--	33.6	43.6	77.2
2020	900	112.7	8.0	--	120.7	33.9	154.6
2021	1968	238.9	9.9	--	248.8	37.2	286.0
2022	1968	238.0	10.2	--	248.2	27.3	275.5
2023	1968	238.0	7.4	--	245.4	29.9	275.3
2024	1968	237.5	7.5	--	245.0	24.7	269.7
2025	1762	218.1	6.7	--	224.8	30.6	255.4
Subtotal	12000	1500.7	71.9	--	1572.6	310.7	1883.3

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	BY 2010 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	144	30.7	4.9	--	35.6	0.7	36.3
2016	250	38.4	3.4	--	41.8	16.1	57.9
2017	312	47.6	4.2	--	51.8	26.2	78.0
2018	460	45.1	4.3	--	49.4	28.6	78.0
2019	300	25.4	2.4	--	27.8	36.1	63.9
2020	900	91.5	6.5	--	98.0	27.5	125.5
2021	1968	190.1	7.9	--	198.0	29.6	227.6
2022	1968	185.7	8.0	--	193.7	21.2	214.9
2023	1968	182.0	5.7	--	187.7	22.9	210.6
2024	1968	178.1	5.6	--	183.7	18.5	202.2
2025	1762	160.3	4.9	--	165.2	22.6	187.8
Subtotal	12000	1174.9	57.8	--	1232.7	250.0	1482.7

Cost Quantity Information 3020 | Procurement | Missile Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2010 $M**
2015	144	30.4
2016	250	37.9
2017	312	47.0
2018	460	44.5
2019	300	25.1
2020	900	90.3
2021	1968	187.6
2022	1968	183.3
2023	1968	179.7
2024	1968	175.8
2025	1762	158.3
Subtotal	12000	1159.9

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	8/6/2010	8/6/2010
Approved Quantity	4034	9392
Reference	Milestone B ADM	Milestone B ADM
Start Year	2013	2015
End Year	2018	2022

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the current approved Milestone (MS) B SDB II Acquisition Strategy, which requires the completion of Operational Test and Evaluation (OT&E) on all three Threshold aircraft prior to the FRP decision. Since the SDB II contract award, there have been further delays to the F-35 System Development and Demonstration (SDD) program. As a result, the SDB II integration will be accomplished as a follow-on integration to the F-35 SDD. SDB II OT&E on the F-35 will not be completed by the FRP Threshold of October 2019, thus delaying the FRP decision until September 2022. The current number of LRIP weapons is 9,392, which is 55 percent of the full SDB II production quantity of 17,000 weapons. The quantity of LRIP weapons will be assessed at MS C. Once the F-35 Follow-on Development schedule is finalized, the SDB II LRIP quantity and APB schedule dates will be updated.

Foreign Military Sales

Notes

SDB II is a participant in the 2014 Defense Exportability Feature Program. OSD committed $550K on May 21, 2014 and Raytheon Missile Systems matched $550K for a total funding of $1.1M. SDB II briefed the Tri-Service Committee (TSC) on January 16, 2014 on the SDB II export strategy. The TSC received an update to the export releasability strategy on June 19, 2014. SDB II received the final decision memorandum on June 25, 2014.

Nuclear Costs

None

Unit Cost

Unit Cost Report

Item	BY 2010 $M Current UCR Baseline (Oct 2010 APB)	BY 2010 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	4577.5	3602.6	
Quantity	17163	17163	
Item	0.267	0.210	-21.35
Average Procurement Unit Cost			
Cost	2976.3	2012.7	
Quantity	17000	17000	
Unit Cost	0.175	0.118	-32.57

Item	BY 2010 $M Original UCR Baseline (Oct 2010 APB)	BY 2010 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	4577.5	3602.6	
Quantity	17163	17163	
Unit Cost	0.267	0.210	-21.35
Average Procurement Unit Cost			
Cost	2976.3	2012.7	
Quantity	17000	17000	
Unit Cost	0.175	0.118	-32.57

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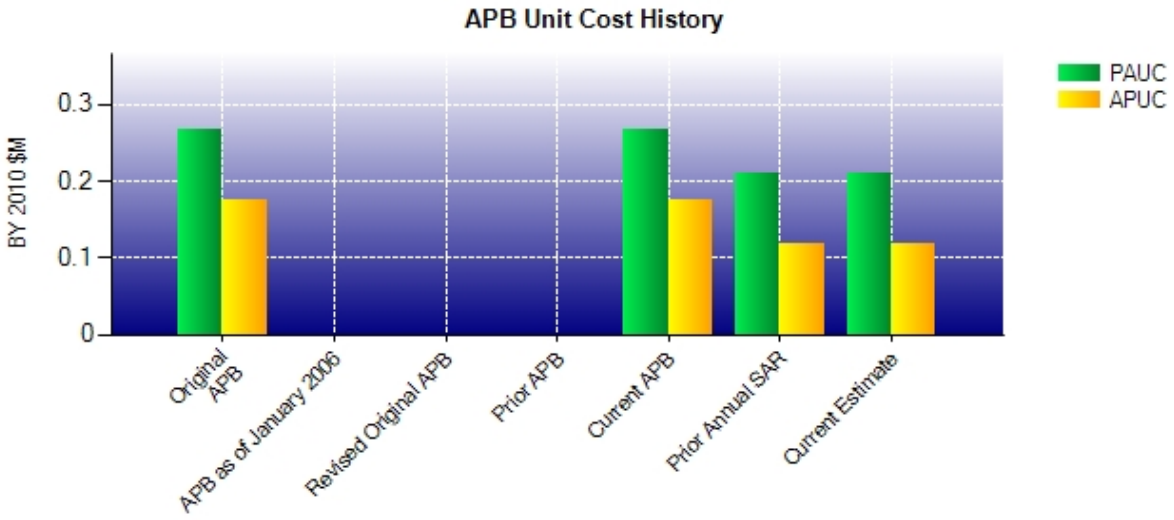
Unit Cost History



Item	Date	BY 2010 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 2010	0.267	0.175	0.304	0.209
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	N/A	N/A	N/A	N/A	N/A
Current APB	Oct 2010	0.267	0.175	0.304	0.209
Prior Annual SAR	Dec 2013	0.209	0.119	0.245	0.150
Current Estimate	Dec 2014	0.210	0.118	0.248	0.151

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.304	0.006	0.000	0.001	0.000	-0.064	0.000	0.001	-0.056	0.248

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.209	0.005	0.000	0.001	0.000	-0.065	0.000	0.001	-0.058	0.151

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	Jul 2010	N/A	Jul 2010
Milestone C	N/A	Jan 2013	N/A	May 2015
IOC	N/A	Jul 2016	N/A	Jul 2017
Total Cost (TY $M)	N/A	5210.4	N/A	4259.5
Total Quantity	N/A	17163	N/A	17163
PAUC	N/A	0.304	N/A	0.248

The PM's estimate for Milestone (MS) C is 3rd quarter FY 2015. However, we will conduct MS C no later than 60 days after closeout or mutual agreement of disposition of all System Verification Review action items.

The IOC event above uses the F-15E Required Assets Available (RAA) milestone which is a surrogate for IOC, The F-15E is the initial aircraft with SDB II capability. There are three additional IOCs for this program, F/A-18E/F, F-35B and F-35C Initial Fielding, all occurring after the F-15E RAA milestone.

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	1665.0	3545.4	--	5210.4
Previous Changes				
Economic	+18.4	+119.1	--	+137.5
Quantity	--	--	--	--
Schedule	--	+11.5	--	+11.5
Engineering	--	--	--	--
Estimating	-32.0	-1098.3	--	-1130.3
Other	--	--	--	--
Support	--	-19.5	--	-19.5
Subtotal	-13.6	-987.2	--	-1000.8
Current Changes				
Economic	-7.8	-29.7	--	-37.5
Quantity	--	--	--	--
Schedule	--	+9.6	--	+9.6
Engineering	--	--	--	--
Estimating	+56.8	-8.5	--	+48.3
Other	--	--	--	--
Support	--	+29.5	--	+29.5
Subtotal	+49.0	+0.9	--	+49.9
Total Changes	+35.4	-986.3	--	-950.9
CE - Cost Variance	1700.4	2559.1	--	4259.5
CE - Cost & Funding	1700.4	2559.1	--	4259.5

Summary BY 2010 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	1601.2	2976.3	--	4577.5
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-26.0	--	-26.0
Engineering	--	--	--	--
Estimating	-52.6	-898.4	--	-951.0
Other	--	--	--	--
Support	--	-20.5	--	-20.5
Subtotal	-52.6	-944.9	--	-997.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-30.0	--	-30.0
Engineering	--	--	--	--
Estimating	+41.3	-8.3	--	+33.0
Other	--	--	--	--
Support	--	+19.6	--	+19.6
Subtotal	+41.3	-18.7	--	+22.6
Total Changes	-11.3	-963.6	--	-974.9
CE - Cost Variance	1589.9	2012.7	--	3602.6
CE - Cost & Funding	1589.9	2012.7	--	3602.6

Previous Estimate: June 2014

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-7.8
Adjustment of development contract ceiling funds in FY 2017 (Air Force). (Estimating)	-13.6	-15.5
Increase in program cost due to F-35 program schedule delays (Navy). (Estimating)	+66.9	+85.8
FY 2015 Congressional reduction (Navy). (Estimating)	-14.0	-15.5
Adjustment for current and prior escalation. (Estimating)	+1.4	+1.4
Revised estimate to reflect actual costs (Air Force). (Estimating)	+0.6	+0.6
RDT&E Subtotal	+41.3	+49.0

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-29.7
One year shift in procurement buy profile from FY 2017 to FY 2018 first lot buy (Navy). (Schedule)	0.0	+12.2
One year shift in procurement buy profile from FY 2014 to FY 2015 start (Air Force). (Schedule)	0.0	+33.7
Additional schedule variance to reflect contractor's option pricing (Air Force). (Schedule)	-16.5	-19.3
Additional schedule variance to reflect contractor's option pricing (Navy). (Schedule)	-13.5	-17.0
Removal of remaining FY 2013 funding (Air Force). (Estimating)	-1.8	-2.0
Changes in estimated costs for Engineering Change Orders (ECOs) related to recurring production (Air Force). (Estimating)	+4.2	+6.0
Changes in estimated costs for ECOs related to recurring production (Navy). (Estimating)	-11.2	-13.3
Adjustment for current and prior escalation. (Estimating)	+0.5	+0.8
Adjustment for current and prior escalation. (Support)	+0.4	+0.2
Increases in Government In-House Support and special tooling and test equipment costs (Navy). (Support)	+12.8	+16.8
Increase in Other Support. Revised estimate for the phasing of weapon software maintenance and updates (Air Force). (Support)	+6.4	+12.5
Procurement Subtotal	-18.7	+0.9

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: Phase II EMD
Contractor: Raytheon Company
Contractor Location: 1151 E. Hermans Rd
Tucson, AZ 85756
Contract Number: FA8672-10-C-0002
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: August 09, 2010
Definitization Date: August 09, 2010

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
450.8	509.9	N/A	450.8	509.9	N/A	445.7	457.3

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/22/2015)	-56.0	-4.8
Previous Cumulative Variances	-44.3	-8.1
Net Change	-11.7	+3.3

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to Seeker Section integration activities, rework/repair/retest of previously delivered Seekers; weapons data-link failure; and excess hours under program management.

The favorable net change in the schedule variance is due to hardware issues with the warhead, weapons data-link, Seeker Design Verification Testing, and transceivers.

Notes

Contractor and PM Price at Completion estimates do not include costs for 28 additional normal attack developmental tests inserted during Milestone B and adjustments in the F-35 Joint Strike Fighter (JSF) System Development and Demonstration schedule. The additional test effort and F-35 JSF schedule changes were not included in the original Request For Proposal.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	0	0	163	0.00%
Production	0	0	17000	0.00%
Total Program Quantity Delivered	0	0	17163	0.00%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	4259.5	Years Appropriated	11
Expended to Date	912.4	Percent Years Appropriated	52.38%
Percent Expended	21.42%	Appropriated to Date	1216.7
Total Funding Years	21	Percent Appropriated	28.56%

The above data is current as of December 31, 2014.

The Government does not take delivery of the 163 Developmental Test (DT) assets. The DT test assests will not go to inventory. The 17,000 sustainment quantity will be delivered to inventory.

Operating and Support Cost

Cost Estimate Details

Date of Estimate: May 10, 2010
Source of Estimate: SCP
Quantity to Sustain: 17000
Unit of Measure: Ordnance
Service Life per Unit: 20.00 Years
Fiscal Years in Service: FY 2016 - FY 2046

Development units will not be sustained.

Sustainment Strategy

The SDB II O&S strategy is to use Contractor Logistics Support to cover sustainment activities for 17,000 weapons. A 20 -year warranty is assumed with a 20-year shelf-life and the subsequent demilitarization of the weapon.

Antecedent Information

No Antecedent. SDB II weapon is a new acquisition program that provides Joint fighter/bomber aircraft the capability to engage mobile targets in adverse weather from stand-off ranges by utilizing a multi-mode seeker and a post-release communications weapon data link. SDB II will not replace SDB I.

Annual O&S Costs BY2010 $M		
Cost Element	**SDB II Average Annual Cost Per Ordnance**	**No Antecedent (Antecedent) N/A**
Unit-Level Manpower	1.700	0.000
Unit Operations	0.000	0.000
Maintenance	10.500	0.000
Sustaining Support	20.100	0.000
Continuing System Improvements	11.300	0.000
Indirect Support	1.300	0.000
Other	0.800	0.000
Total	45.700	--

Other cost element includes Government System Safety and Environmental Safety Occupational Health support and updates to the SDB II demilitarization plan.

Item	Total O&S Cost $M			
	SDB II			No Antecedent (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	947.0	1041.7	914.0	N/A
Then Year	1417.4	N/A	1404.6	N/A

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

Equation to Translate Annual Cost to Total Cost

Total O&S cost is equal to the average annual total inventory cost per year times the years of weapon shelf-life, $45.7M * 20 years = $914M (BY 2010).

O&S Cost Variance		
Category	**BY 2010 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Jun 2014 SAR	914.0	
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	914.0	

Disposal Estimate Details

Date of Estimate: May 10, 2010

Source of Estimate: SCP

Disposal/Demilitarization Total Cost (BY 2010 $M): Total costs for disposal of all Ordnance are 33.0