Selected Acquisition Report (SAR)

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

SDB II

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

Small Diameter Bomb Increment II (SDB II)

DoD Component

Air Force

Joint Participants

Department of the Navy

Responsible Office

Responsible Office

Col James "Chris" Baird
102 West D Ave
Eglin AFB, FL 32542

james.baird@eglin.af.mil

Phone 850-883-2881
Fax 850-882-2438
DSN Phone 875-2881
DSN Fax 872-2438
Date Assigned July 11, 2011

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 Navy (DoN) Aquisition Category ID program, with the Air Force (AF) 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 AF 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) miniature munitions carriage, the CNU-660/E carriage system storage container, the Common Munitions Bit and Reprogramming Equipment (CMBRE), and the Joint Mission Planning System (JMPS). The SDB II program will develop and field a sing weapon storage container for the USAF and a dual weapon storage container for the DoN.

Executive Summary

In 2011, the program made significant progress in executing the development and qualification program to field the SDB II system. The Critical Design Review (CDR) was completed on January 20, 2011. The Office of the Deputy Assistant Secretary of Defense for Systems Engineering concluded that the CDR is complete and the SDB II Program is “well situated to continue into the System Capability and Manufacturing Process Demonstration Phase.”

Raytheon Missile Systems (RMS) began flight testing in FY 2011 with an open air Control Test Vehicle release to demonstrate aerodynamic performance of the weapon. System qualification testing of the SDB II tri-mode seeker (millimeter wave, imaging infrared, and semi-active laser) began in late FY 2011 and over 100 hours of Captive Flight Tests against fixed and moving targets have been completed. Warhead lethality testing against heavy armored targets demonstrates weapon effectiveness requirements are being met. The SDB II program is on track for a June 2013 System Verification Review and an August 2013 Milestone (MS) C.

The SDB II program has defined a viable path forward to account for the known F-35 schedule impacts. The FY 2013 President's Budget (PB13) incorporates savings from actual contract option pricing, delayed start of reliability testing and realization of efficiencies gained through competition. PB13 reflects a funding profile to execute the current estimated F-35B and F-35C initial fielding dates of September 2020. Once the F-35 follow-on development schedule is finalized, the SDB II Acquisition Program Baseline (APB) will be updated.

The approved SDB II baseline program was originally planned for F-35 Block 3.X operational flight program (OFP) integration. Since the SDB II contract award there have been further delays to the F-35 System Development and Demonstration (SDD) program. As a result, SDB II integration will be accomplished as a follow-on integration to F-35 SDD. Due to these F-35 delays, the SDB II F-35B and F-35C initial fielding dates stated in the APB will slip from the current threshold date of June 2019 to an estimated initial fielding date of September 2020, resulting in an SDB II APB schedule breach. This drives a change to the full-rate production decision from October 2019 to June 2020 resulting in an additional APB schedule breach. Air Force F-15E fielding is not impacted and remains on track for July 2016.

The Milestone Decision Authority approved MS B on July 29, 2010, and the subsequent APB was signed on October 8, 2010. On August 6, 2010, the Defense Acquisition Executive signed an Acquisition Decision Memorandum authorizing the program to enter Engineering and Manufacturing Development (EMD) and certified the program pursuant to section 2366b of title 10, United States Code. A $450.8 million Fixed Price Incentive Firm-type EMD contract was awarded to RMS, Tucson, Arizona on August 9, 2010. RMS will complete the design, development, weapon integration, and test for the joint interest SDB II program. F-15E integration is being accomplished by Boeing, St. Louis, Missouri through the F-15 Development Systems Program Office using Air Force SDB II funding. The F-35B and F-35C aircraft integration contract will be awarded to Lockheed Martin, Fort Worth, Texas by the F-35 Joint Strike Fighter Joint Program Office using Department of Navy SDB II funding.

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

Threshold Breaches

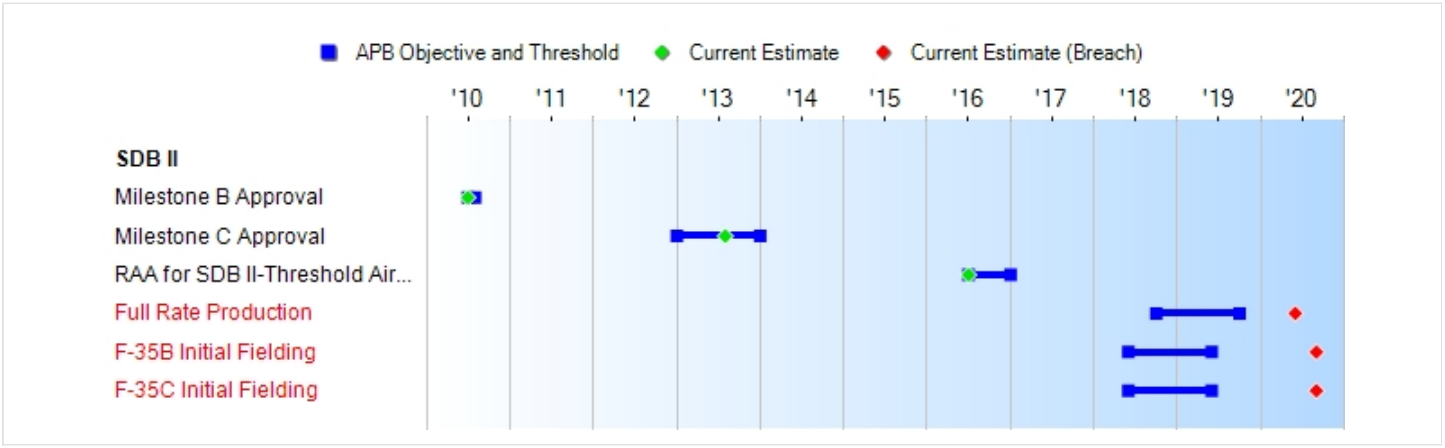
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
Unit Cost	PAUC	☐
	APUC	☐

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

Explanation of Breach

The approved SDB II baseline program was originally planned for F-35 Block 3.X operational flight program (OFP) integration. Since the SDB II contract award there have been further delays to the F-35 System Development and Demonstration (SDD) program. As a result, SDB II integration will be accomplished as a follow-on integration to F-35 SDD. Due to these F-35 delays, the SDB II F-35B and F-35C initial fielding dates stated in the Acquisition Program Baseline (APB) will slip from the current threshold date of June 2019 to an estimated September 2020 initial fielding date, resulting in an SDB II APB schedule breach. This drives a change to the full-rate production decision from October 2019 to June 2020 resulting in an additional APB schedule breach. Air Force F-15E fielding is not impacted and remains on track for July 2016.

Schedule



Milestones	SAR Baseline Dev Est	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	AUG 2013	
RAA for SDB II-Threshold Aircraft F-15E	JUL 2016	JUL 2016	JAN 2017	JUL 2016	
Full Rate Production	OCT 2018	OCT 2018	OCT 2019	**JUN 2020** [1]	(Ch-1)
F-35B Initial Fielding	JUN 2018	JUN 2018	JUN 2019	**SEP 2020** [1]	(Ch-1)
F-35C Initial Fielding	JUN 2018	JUN 2018	JUN 2019	**SEP 2020** [1]	(Ch-1)

[1] *APB Breach*

Acronyms And Abbreviations

RAA - Required Assets Available

Change Explanations

(Ch-1) The approved SDB II baseline program was originally planned for F-35 Block 3.X operational flight program (OFP) integration. Since the SDB II contract award there have been further delays to the F-35 System Development and Demonstration (SDD) program. As a result, SDB II integration will be accomplished as a follow-on integration to F-35 SDD. Due to these F-35 delays, the SDB II F-35B and F-35C initial fielding dates stated in the Acquisition Program Baseline (APB) will slip from the current threshold date of June 2019 to an estimated September 2020 initial fielding date, resulting in an SDB II schedule breach. This drives a change to the full rate production decision from October 2019 to June 2020 resulting in an additional APB schedule breach. Air Force F-15E fielding is not impacted and remains on track for July 2016.

Memo

SDB II Required Assets Available (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 includes associated spares, support equipment (including load crew trainers), initial training, mission planning capability, and verified technical orders. The Commander Air Combat Command (COMACC), or applicable Major Command

(MAJCOM) Commander (if first operational unit is not within Air Combat Command (ACC)), will declare Initial Operational Capability (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 Navy first unit equipped will be an F-35 squadron. The quantity of SDB II weapons required for F-35 Initial Fielding is 90 weapons and 22 carriage systems based upon a 10 plane squadron with two fully loaded carriage systems each plus 10 spare weapons.

Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Scenario Weapon Effectiveness	Given SDB Increment II weapon delivery from an objective platform employing self targeting or an SDB Increment 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 28 Jul 09), the SDB Increment 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 28 Jul 09.	Given SDB Increment II weapon delivery from an objective platform employing self targeting or an SDB Increment 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 28 Jul 09), the SDB Increment 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 28 Jul 09.	Given SDB Increment II weapon delivery from a threshold aircraft* employing self targeting or** a threshold aircraft delivering SDB Increment II with third party targeting via a JTAC, the SDB Increment 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 28 Jul 09.	TBD	Given SDB Increment II weapon delivery from a threshold aircraft* employing self targeting or** a threshold aircraft delivering SDB Increment II with third party targeting via a JTAC, the SDB Increment 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 28 Jul 09.
Weapon Loadout	Four SDB Increment II weapons integrated onto the BRU-61/A. Aircraft will	Four SDB Increment II weapons integrated onto the BRU-61/A. Aircraft will	Four SDB Increment II weapons integrated onto the BRU-61/A. Aircraft will	TBD	Four SDB Increment II weapons integrated onto the BRU-61/A. Aircraft will

	be able to carry and employ both SDB Increment I and Increment II weapons loaded on separate BRU-61/As during the same mission.	be able to carry and employ both SDB Increment I and Increment II weapons loaded on separate BRU-61/As during the same mission.	be able to carry and employ both SDB Increment I and Increment II weapons loaded on separate BRU-61/As during the same mission.		be able to carry and employ both SDB Increment I and Increment II weapons loaded on separate BRU-61/As during the same mission.
Carrier Operability (Navy Unique Requirement)	SDB Increment 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 transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere,	SDB Increment 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 transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/ washdown, salt fog/salt spray, explosive atmosphere,	SDB Increment 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 transported, handled, stored, prepared, uploaded, and downloaded; and capable of operating in EMI, EMC, container immersion/w ashdown, salt fog/salt spray, explosive atmosphere,	TBD	SDB Increment 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 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 contaminat-ion, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.	mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contaminat-ion, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.	mechanical shock (i.e., near-miss, catapult launches/ arrested landings, and handling shock), acoustic noise, vibration, fluid contaminat-ion, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenish-ment ship operations.		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 environ-ments of aircraft carrier and replenish-ment 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,	The capability,	The capability,	TBD	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 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,	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 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,	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 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,		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 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 communicat-ions 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementati on 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,	and the principles and rules identified in the DOD IEA, excepting tactical and non-IP communicat-ions 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementati on 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,	and the principles and rules identified in the DOD IEA, excepting tactical and non-IP communicat-ions 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementati on 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,		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, authenti-cation, confi-dentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA, and 5) Support-ability requirements to include

	Specturm and JTRS require-ments.	Specturm and JTRS require-ments.	Specturm and JTRS require-ments.		SAASM, Specturm and JTRS requirements .
Weapon Effectiveness	Given meeting the threshold of WE the SDB Increment 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 28 Jul 09.	Given meeting the threshold of WE the SDB Increment 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 28 Jul 09.	SDB Increment II will achieve a minimum PSSK of (TH 3) for each target type (Table 6-1 of CDD for SDB II dated 28 Jul 09) in each environment-al/ threat condition case listed in Appendix F of CDD for SDB II dated 28 Jul 09.	TBD	SDB Increment II will achieve a minimum PSSK of (TH 3) for each target type (Table 6-1 of CDD for SDB II dated 28 Jul 09) in each environ-mental/ threat condition case listed in Appendix F of CDD for SDB II dated 28 Jul 09

Requirements Source: Miniature Munitions Capability (MMC) Operational Requirements Document (ORD) approved April 8, 2005 SDB II Capability Development Document (CDD) approved July 28, 2009

Acronyms And Abbreviations

ATO - Authorization To Operate
BRU - Bomb Rack Unit
CDD - Capability Development Document
DAA - Designated Accrediting Authority
DOD - Department of Defense
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
IT - Information Technology
JTAC - Joint Terminal Attack Controller
JTRS - Joint Tactical Radio System
Non-IP - Non-Internet Protocol
OB - Objective
PSSK - Probability of Single Shot Kill
SAASM - Selective Availability / Anti-Spoofing Module
SDB II - Small Diameter Bomb, Increment II (SDB II)
TBD - To Be Determined

TH - Threshold
TV-1 - Technical View - 1
WE - Weapon Effectiveness

Change Explanations

None

Memo

* Threshold aircraft is defined as F-15E for Air Force (AF) and the F-35B and F-35C for Department of Navy. Program schedule for the AF 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.

Track To Budget

RDT&E			
APPN 1319	BA 05	PE 0604329N	(Navy)
	Project 3072	Small Diameter Bomb	
APPN 3600	BA 05	PE 0604329F	(Air Force)
	Project 5191	Small Diameter Bomb	

Procurement			
APPN 1507	BA 02	PE 0204162N	(Navy)
	ICN 223800	Small Diameter Bomb	
APPN 3020	BA 02	PE 0207327F	(Air Force)
	ICN SDB000	Small Diameter Bomb	

This SAR reflects funding for SDB II efforts only.

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2010 $M			BY2010 $M	TY $M		
Appropriation	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	1601.2	1601.2	1761.3	1549.0	1665.0	1665.0	1643.8
Procurement	2976.3	2976.3	3273.9	2105.2	3545.4	3545.4	2568.7
Flyaway	2673.8	--	--	1846.4	3188.4	--	2254.9
Recurring	2673.8	--	--	1846.4	3188.4	--	2254.9
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	302.5	--	--	258.8	357.0	--	313.8
Other Support	302.5	--	--	258.8	357.0	--	313.8
Initial Spares	0.0	--	--	0.0	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	3654.2	5210.4	5210.4	4212.5

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.

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

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2013 President's Budget / December 2011 SAR (TY$ M)

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	669.1	152.5	160.8	145.6	86.6	63.3	128.4	237.5	1643.8
Procurement	0.0	0.0	42.0	62.0	88.0	87.0	106.5	2183.2	2568.7
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 2013 Total	669.1	152.5	202.8	207.6	174.6	150.3	234.9	2420.7	4212.5
PB 2012 Total	768.0	170.5	206.9	231.8	292.2	282.4	376.0	2878.8	5206.6
Delta	-98.9	-18.0	-4.1	-24.2	-117.6	-132.1	-141.1	-458.1	-994.1

The FY 2013 President's Budget incorporates savings from actual contract option pricing, delayed start of reliability testing and realization of efficiencies gained through competition.

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	163	0	0	0	0	0	0	0	0	163
Production	0	0	0	144	250	390	460	390	15366	17000
PB 2013 Total	163	0	0	144	250	390	460	390	15366	17163
PB 2012 Total	163	0	0	144	250	390	550	1050	14616	17163
Delta	0	0	0	0	0	0	-90	-660	750	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2006	--	--	--	--	--	--	24.7
2007	--	--	--	--	--	--	92.0
2008	--	--	--	--	--	--	139.6
2009	--	--	--	--	--	--	107.1
2010	--	--	--	--	--	--	126.5
2011	--	--	--	--	--	--	100.0
2012	--	--	--	--	--	--	132.9
2013	--	--	--	--	--	--	143.0
2014	--	--	--	--	--	--	115.0
2015	--	--	--	--	--	--	54.0
2016	--	--	--	--	--	--	18.0
2017	--	--	--	--	--	--	64.0
2018	--	--	--	--	--	--	15.7
2019	--	--	--	--	--	--	18.4
2020	--	--	--	--	--	--	5.6
Subtotal	**136**	**--**	**--**	**--**	**--**	**--**	**1156.5**

Annual Funding BY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2006	--	--	--	--	--	--	26.2
2007	--	--	--	--	--	--	95.2
2008	--	--	--	--	--	--	141.6
2009	--	--	--	--	--	--	107.2
2010	--	--	--	--	--	--	125.1
2011	--	--	--	--	--	--	96.9
2012	--	--	--	--	--	--	126.5
2013	--	--	--	--	--	--	133.9
2014	--	--	--	--	--	--	105.9
2015	--	--	--	--	--	--	48.8
2016	--	--	--	--	--	--	16.0
2017	--	--	--	--	--	--	55.8
2018	--	--	--	--	--	--	13.5
2019	--	--	--	--	--	--	15.5
2020	--	--	--	--	--	--	4.6
Subtotal	**136**	**--**	**--**	**--**	**--**	**--**	**1112.7**

Annual Funding TY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2005	--	--	--	--	--	--	8.9
2006	--	--	--	--	--	--	11.7
2007	--	--	--	--	--	--	9.4
2008	--	--	--	--	--	--	11.0
2009	--	--	--	--	--	--	17.2
2010	--	--	--	--	--	--	7.6
2011	--	--	--	--	--	--	13.4
2012	--	--	--	--	--	--	19.6
2013	--	--	--	--	--	--	17.8
2014	--	--	--	--	--	--	30.6
2015	--	--	--	--	--	--	32.6
2016	--	--	--	--	--	--	45.3
2017	--	--	--	--	--	--	64.4
2018	--	--	--	--	--	--	94.8
2019	--	--	--	--	--	--	70.2
2020	--	--	--	--	--	--	32.8
Subtotal	**27**	**--**	**--**	**--**	**--**	**--**	**487.3**

Annual Funding BY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2005	--	--	--	--	--	--	9.7
2006	--	--	--	--	--	--	12.4
2007	--	--	--	--	--	--	9.7
2008	--	--	--	--	--	--	11.1
2009	--	--	--	--	--	--	17.2
2010	--	--	--	--	--	--	7.5
2011	--	--	--	--	--	--	12.9
2012	--	--	--	--	--	--	18.6
2013	--	--	--	--	--	--	16.6
2014	--	--	--	--	--	--	28.1
2015	--	--	--	--	--	--	29.4
2016	--	--	--	--	--	--	40.1
2017	--	--	--	--	--	--	56.0
2018	--	--	--	--	--	--	81.0
2019	--	--	--	--	--	--	58.9
2020	--	--	--	--	--	--	27.1
Subtotal	**27**	**--**	**--**	**--**	**--**	**--**	**436.3**

Annual Funding TY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2013	144	37.8	3.0	--	40.8	1.2	42.0
2014	250	48.0	7.1	--	55.1	6.9	62.0
2015	390	67.4	6.5	--	73.9	14.1	88.0
2016	460	64.8	6.2	--	71.0	16.0	87.0
2017	300	56.6	4.0	--	60.6	20.4	81.0
2018	900	112.7	9.4	--	122.1	31.0	153.1
2019	1968	235.9	12.0	--	247.9	36.9	284.8
2020	1968	235.9	12.4	--	248.3	33.6	281.9
2021	1968	235.9	8.4	--	244.3	38.8	283.1
2022	1968	235.9	8.6	--	244.5	35.3	279.8
2023	1684	200.8	7.1	--	207.9	39.0	246.9
Subtotal	**12000**	**1531.7**	**84.7**	**--**	**1616.4**	**273.2**	**1889.6**

Annual Funding BY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2013	144	35.0	2.8	--	37.8	1.1	38.9
2014	250	43.7	6.4	--	50.1	6.3	56.4
2015	390	60.3	5.8	--	66.1	12.6	78.7
2016	460	56.9	5.4	--	62.3	14.1	76.4
2017	300	48.8	3.5	--	52.3	17.6	69.9
2018	900	95.5	8.0	--	103.5	26.2	129.7
2019	1968	196.4	10.0	--	206.4	30.7	237.1
2020	1968	192.9	10.1	--	203.0	27.5	230.5
2021	1968	189.5	6.7	--	196.2	31.2	227.4
2022	1968	186.1	6.8	--	192.9	27.9	220.8
2023	1684	155.6	5.5	--	161.1	30.3	191.4
Subtotal	**12000**	**1260.7**	**71.0**	**--**	**1331.7**	**225.5**	**1557.2**

Annual Funding TY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2017	90	17.0	1.1	--	18.1	7.4	25.5
2018	750	93.9	6.6	--	100.5	7.2	107.7
2019	750	89.9	4.6	--	94.5	7.1	101.6
2020	750	89.9	4.6	--	94.5	4.8	99.3
2021	750	89.9	3.7	--	93.6	4.8	98.4
2022	750	89.9	3.6	--	93.5	4.8	98.3
2023	1160	138.3	5.5	--	143.8	4.5	148.3
Subtotal	**5000**	**608.8**	**29.7**	**--**	**638.5**	**40.6**	**679.1**

Annual Funding BY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2017	90	14.6	0.9	--	15.5	6.4	21.9
2018	750	79.2	5.6	--	84.8	6.0	90.8
2019	750	74.5	3.8	--	78.3	5.9	84.2
2020	750	73.2	3.7	--	76.9	3.9	80.8
2021	750	71.9	3.0	--	74.9	3.8	78.7
2022	750	70.6	2.8	--	73.4	3.8	77.2
2023	1160	106.7	4.2	--	110.9	3.5	114.4
Subtotal	**5000**	**490.7**	**24.0**	**--**	**514.7**	**33.3**	**548.0**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	10/8/2010	10/8/2010
Approved Quantity	4034	4034
Reference	Milestone B Acquisition Program Baseline	Milestone B Acquisition Program Baseline
Start Year	2013	2013
End Year	2018	2018

The current SDB II acquisition strategy requires the completion of Operational Test and Evaluation (OT&E) on all three threshold aircraft prior to the Full Rate Production (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. The current approved number of Low Rate Initial Production (LRIP) weapons is 4,034, which is 24% of the full SDB II production quantity of 17,000 weapons. Once the F-35 follow-on development schedule is finalized, the SDB II LRIP quantity and Acquisition Program Baseline schedule dates will be updated.

Foreign Military Sales

None

Nuclear Cost

None

Unit Cost

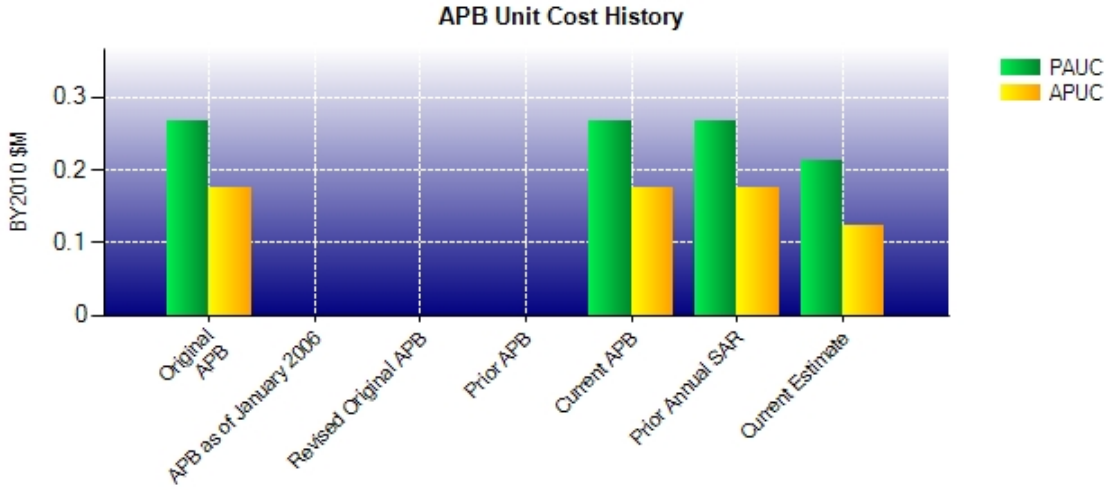
Unit Cost Report

Unit Cost	BY2010 $M Current UCR Baseline (OCT 2010 APB)	BY2010 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	4577.5	3654.2	
Quantity	17163	17163	
Unit Cost	0.267	0.213	-20.22
Average Procurement Unit Cost (APUC)			
Cost	2976.3	2105.2	
Quantity	17000	17000	
Unit Cost	0.175	0.124	-29.14

Unit Cost	BY2010 $M Original UCR Baseline (OCT 2010 APB)	BY2010 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	4577.5	3654.2	
Quantity	17163	17163	
Unit Cost	0.267	0.213	-20.22
Average Procurement Unit Cost (APUC)			
Cost	2976.3	2105.2	
Quantity	17000	17000	
Unit Cost	0.175	0.124	-29.14

The FY 2013 President's Budget incorporates savings from actual contract option pricing, delayed start of reliability testing and realization of efficiencies gained through competition.

Unit Cost History



		BY2010 $M		TY $M	
	Date	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 2010	0.266	0.175	0.303	0.209
Current Estimate	DEC 2011	0.213	0.124	0.245	0.151

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.304	0.005	0.000	0.001	0.000	-0.062	0.000	-0.003	-0.059	0.245

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.209	0.004	0.000	0.001	0.000	-0.060	0.000	-0.003	-0.058	0.151

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	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	AUG 2013
IOC	N/A	JUN 2018	N/A	SEP 2020
Total Cost (TY $M)	N/A	5210.4	N/A	4212.5
Total Quantity	N/A	17163	N/A	17163
Prog. Acq. Unit Cost (PAUC)	N/A	0.304	N/A	0.245

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1665.0	3545.4	--	5210.4
Previous Changes				
Economic	--	+3.9	--	+3.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-3.8	-3.5	--	-7.3
Other	--	--	--	--
Support	--	-0.4	--	-0.4
Subtotal	-3.8	--	--	-3.8
Current Changes				
Economic	+14.9	+66.0	--	+80.9
Quantity	--	--	--	--
Schedule	--	+14.9	--	+14.9
Engineering	--	--	--	--
Estimating	-32.3	-1008.1	--	-1040.4
Other	--	--	--	--
Support	--	-49.5	--	-49.5
Subtotal	-17.4	-976.7	--	-994.1
Total Changes	-21.2	-976.7	--	-997.9
CE - Cost Variance	1643.8	2568.7	--	4212.5
CE - Cost & Funding	1643.8	2568.7	--	4212.5

Summary Base Year 2010 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1601.2	2976.3	--	4577.5
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-2.2	-3.0	--	-5.2
Other	--	--	--	--
Support	--	-1.1	--	-1.1
Subtotal	-2.2	-4.1	--	-6.3
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-50.0	-824.4	--	-874.4
Other	--	--	--	--
Support	--	-42.6	--	-42.6
Subtotal	-50.0	-867.0	--	-917.0
Total Changes	-52.2	-871.1	--	-923.3
CE - Cost Variance	1549.0	2105.2	--	3654.2
CE - Cost & Funding	1549.0	2105.2	--	3654.2

Previous Estimate: December 2010

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+14.9
FY 2010 Congressional rescission (funding not required due to delayed Engineering and Manufacturing Development contract award). (Air Force) (Estimating)	-22.0	-22.0
FY 2011 Congressional reduction. (Air Force) (Estimating)	-51.8	-53.5
Increase in program cost and re-phasing due to F-35 program schedule delays. (Navy) (Estimating)	+34.0	+54.1
Adjustment for current and prior escalation. (Estimating)	-4.6	-4.7
Revised estimate for Government support costs. (Air Force) (Estimating)	-5.6	-6.2
RDT&E Subtotal	-50.0	-17.4

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+66.0
Delayed start of Navy production from FY 2016 to FY 2017. (Navy) (Schedule)	0.0	+14.9
Decrease for change in pricing from estimated to actual contract option pricing. (Air Force) (Estimating)	-428.3	-526.9
Restructure of production reliability testing program. (Air Force) (Estimating)	-52.2	-59.1
Decrease for change in pricing from estimated to actual contract option pricing. (Navy) (Estimating)	-265.2	-326.8
Adjustment to realign flyaway and support. (Air Force) (Estimating)	-125.2	-150.9
Adjustment to realign flyaway and support. (Navy) (Estimating)	+46.5	+55.6
Increase in Other Support (Air Force). (Subtotal)	+7.5	+10.3
Decrease for change in pricing from estimated to actual contract option pricing (Air Force). (Support)	(-117.7)	(-140.6)
Adjustment to realign flyaway and support (Air Force). (Support)	(+125.2)	(+150.9)
Decrease in Other Support (Navy). (Subtotal)	-50.1	-59.8
Decrease in support costs due to delayed production start (Navy). (Support)	(-3.6)	(-4.2)
Adjustment to realign flyaway and support (Navy). (Support)	(-46.5)	(-55.6)
Procurement Subtotal	-867.0	-976.7

Contracts

Appropriation: RDT&E	
Contract Name	**SDB II Engineering and Manufacturing Development**
Contractor	Raytheon Company
Contractor Location	Tucson, AZ 85756
Contract Number, Type	FA8672-10-C-0002, FPIF
Award Date	August 09, 2010
Definitization Date	August 09, 2010

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	450.8	450.8

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	-2.1	-2.0
Previous Cumulative Variances	+0.5	-2.6
Net Change	-2.6	+0.6

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional labor required for circuit card testing, qualification test documentation, and Critical Design Review (CDR) preparation. The additional up front labor is expected to yield efficiencies in automation and reduced seeker assembly time, circuit card fabrication inspection and reduced rework, and in infrastructure support.

The favorable net change in the schedule variance is due to completion of the CDR and supplier negotiations. These activities occured in early 2011.

Contract Comments

Contractor and Program Manager 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 Design schedule. The additional test effort and F-35 JSF schedule changes were not included in the original request for proposal and will requiremodification to the awarded contract.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	0	0	163	0.00%
Production	0	0	17000	0.00%
Total Program Quantities Delivered	0	0	17163	0.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	4212.5	Years Appropriated	8
Expenditures To Date	567.4	Percent Years Appropriated	42.11%
Percent Expended	13.47%	Appropriated to Date	821.6
Total Funding Years	19	Percent Appropriated	19.50%

The information in this section is current as of January 31, 2012.

Operating and Support Cost

Assumptions And Ground Rules

The SDB II Operating & Support (O&S) cost estimate was completed by the Air Force Cost Analysis Agency in support of the Milestone B decision in May 2010. 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. This estimate includes $84.5 million (then year) for demilitarization and disposal of SDB II weapons.

SDB I (GBU-39) is not an antecedent of SDB II (GBU-53). 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. There is no antecedent system.

Costs BY2010 $M		
Cost Element	**SDB II Average Total Inventory Cost Per Year**	**No Antecedent N/A**
Unit-Level Manpower	1.7	--
Unit Operations	--	--
Maintenance	10.5	--
Sustaining Support	20.0	--
Continuing System Improvements	11.3	--
Indirect Support	1.3	--
Other	3.8	--
Total Unitized Cost (Base Year 2010 $)	48.6	--

Total O&S Costs $M	SDB II	No Antecedent
Base Year	972.8	--
Then Year	1525.9	--

Unit of measure changed from Average Annual Cost Per Weapon to Average Total Inventory Cost Per Year per SAR guidance.