Selected Acquisition Report (SAR)

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

Small Diameter Bomb Increment II (SDB II)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Program Name

Small Diameter Bomb Increment II (SDB II)

DoD Component

Air Force

Joint Participants

Department of the Navy

Responsible Office

Responsible Office

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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) Acquisition 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. Funding for integration of threshold aircraft for F-15E, F-35B, and F-35C is in the SDB II program. 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. Funding for objective aircraft is provided by the objective aircraft program. SDB II will be compatible with the Bomb Rack Unit (BRU-61) miniature munitions carriage, the CNU-660/E carriage system, the Common Munitions Bit and Reprogramming Equipment (CMBRE), and the Joint Mission Planning System (JMPS). The SDB II program will develop and field a single weapon storage container (USAF) and a dual weapon storage container (DoN).

Executive Summary

In 2012, the program made significant progress in executing the development, test, and qualification program to field the SDB II system. Raytheon Missile Systems (RMS) successfully completed eight of twelve component-level qualification tests and All Up Round qualification testing is expected to start in May 2013. The test team has successfully completed two Guided Test Vehicle (GTV) missions. Both GTV missions, open air guided shots, used the multi-mode seeker to acquire, track, and guide to the moving target, scoring a direct hit. The GTV missions demonstrated the weapons performance against a ZIL cargo truck and a SCUD surrogate, targets were moving at operationally representative speeds. The Captive Flight Test (CFT) program, which consists of the SDB II multi-mode seeker (millimeter wave, imaging infrared, and semi-active laser) pod mounted on a UH-1 helicopter, has completed six test missions with over 192 flight hours with no reliability issues to verify the seeker's ability to search, acquire, and track moving and stationary targets; some employing various denial and deception techniques. CFT data has demonstrated the seekers performance in various weather conditions: relative humidity up to 85 percent, rain, snow and re-frozen snow at temperatures ranging from -12˚F to 36˚F. RMS successfully completed four open air Control Test Vehicle releases that demonstrated the ability of SDB II to enter the Link-16 network, perform Global Positioning System guidance, safe separation, autopilot capture of the airframe, validation of aerodynamic models, and to fly with a certified Flight Termination System. The SDB II team successfully executed four Jettison Test Vehicle missions to clear the Separation and Jettison envelopes for the F-15E. Data collected from GTV and CFT testing is being used to validate the Integrated Flight Simulation (IFS). To-date, the IFS and test results show good correlation. The IFS is the primary tool to perform weapon effectiveness predictions. RMS delivered the fourth of six planned IFS builds. Additionally, the SDB II completed arena testing to characterize warhead fragmentation and blast performance. Results from the arena testing were incorporated into the joint technical coordinating group's lethality modeling data base to support lethality performance assessments. While the upcoming test event schedule is aggressive, the SDB II program is on track for a November 2013 System Verification Review (SVR) and a January 2014 Milestone (MS) C.

Due to testing delays, SVR has changed from June 2013 to November 2013. Based on this, the Program Manager's forecast for MS C is now January 2014. The FY 2014 President's Budget shifts the U.S. Air Force (USAF) production funding by one year. There is no change to the Department of Navy (DoN) production start in FY 2017. This AF shift realigns the AF and DoNs production funding to the quantity profile established at MS B since DoN previously shifted their production profile one year due to F-35 delays. The changes do not affect F-15E Required Assets Available which remains on track for July 2016.

The SDB II program office has made considerable progress on the F-35 risk reduction effort to address the ongoing F-35 System Development and Demonstration program delays. The SDB II team successfully conducted F-35B and F-35C weapon's bay fit checks utilizing production jets. The data collected during these fit checks will be used to finalize the modification of the F-35B weapon's bay. These efforts are on track and serve as a critical risk reduction event for both the SDB II and F-35 programs.

Program Background:
A $450.8 million Fixed Price Incentive Firm-type Engineering and Manufacturing Development 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 DoN SDB II funding.

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

Threshold Breaches

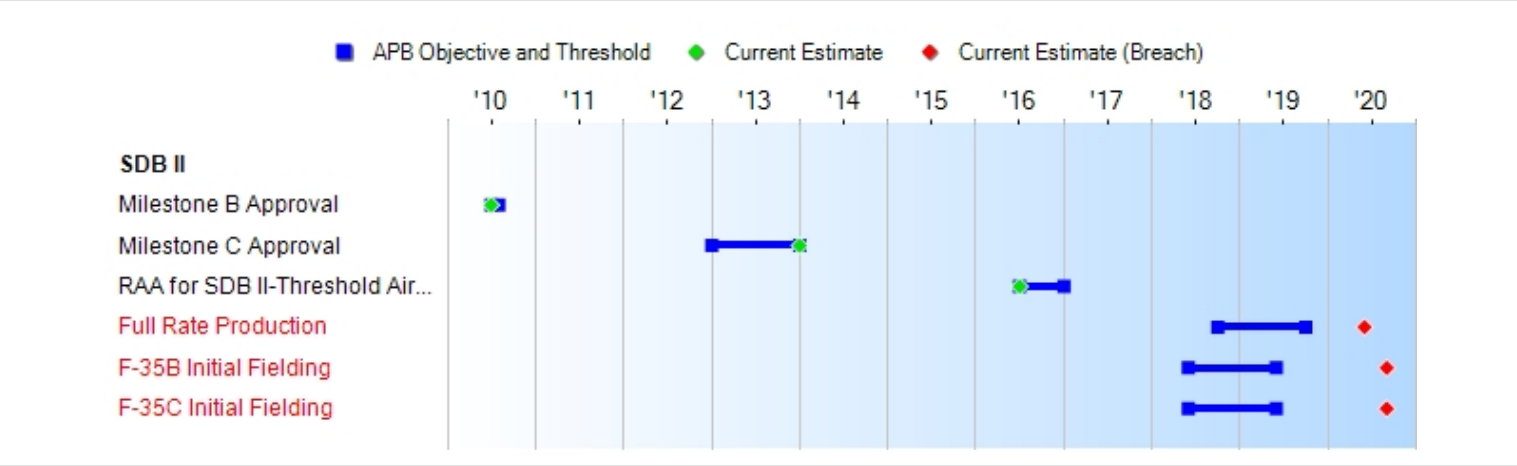
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

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

Explanation of Breach

Schedule breaches were reported in the December 2011 SAR.

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	JAN 2014	(Ch-1)
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]	
F-35B Initial Fielding	JUN 2018	JUN 2018	JUN 2019	**SEP 2020** [1]	
F-35C Initial Fielding	JUN 2018	JUN 2018	JUN 2019	**SEP 2020** [1]	

[1] *APB Breach*

Change Explanations

(Ch-1) Due to testing delays, SVR has changed from June 2013 to November 2013. Based on this, the Program Manager's current estimate for Milestone (MS) C current estimate changed from August 2013 to January 2014. The FY 2014 President's Budget shifts Air Force (AF) production funding by one year. This shift realigns the AF and Department of Navy's (DoNs) production funding to the quantity profile established at MS B. The changes do not affect F-15E RAA, which remains on track for July 2016.

Memo

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 Commander Air Combat Command, or applicable Major Command Commander (if first operational unit is not within Air Combat Command), will declare Initial Operational Capability for the U.S. 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 DoN 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 ten plane squadron with two fully loaded carriage systems each plus ten spare weapons.

Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Scenario Weapon Effectiveness (WE)	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 July 28, 2009), 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 July 28, 2009.	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 July 28, 2009.	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 July 28, 2009.	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 July 28, 2009.
Weapon Loadout	Four SDB Increment II	Four SDB Increment II	Four SDB Increment II	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.	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.	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.		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.
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,	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,	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,	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.	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.	EMC, container immersion/w ashdown, 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.		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 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	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.		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 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	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	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 requirements for transition to Net-Centric military operations to include: 1) Solutions architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF	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 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	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 oOD 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	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		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

	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.	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.	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.		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 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 July 28, 2009.	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 July 28, 2009.	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 July 28, 2009.	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 July 28, 2009) in each environ-mental/ threat condition case listed in Appendix F of CDD for SDB II dated July 28, 2009.

Requirements Source: Miniature Munitions Capability (MMC) Operational Requirements Document (ORD) dated April 8, 2005 and SDB II Capability Development Document (CDD) dated 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
IP - Internet Protocol
IT - Information Technology
JTAC - Joint Terminal Attack Controller
JTRS - Joint Tactical Radio System
OB - Objective
PSSK - Probability of Single Shot Kill
SAASM - Selective Availability / Anti-Spoofing Module
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

Appropriation	BY2010 $M			BY2010 $M	TY $M		
	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	1531.6	1665.0	1665.0	1635.6
Procurement	2976.3	2976.3	3273.9	2021.7	3545.4	3545.4	2549.8
Flyaway	2673.8	--	--	1773.5	3188.4	--	2242.9
Recurring	2673.8	--	--	1773.5	3188.4	--	2242.9
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	302.5	--	--	248.2	357.0	--	306.9
Other Support	302.5	--	--	248.2	357.0	--	306.9
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	3553.3	5210.4	5210.4	4185.4

Confidence Level for Current APB Cost 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.

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
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	819.8	160.8	142.3	87.0	63.4	127.8	84.5	150.0	1635.6
Procurement	0.0	42.0	42.3	71.4	102.0	120.4	172.0	1999.7	2549.8
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 2014 Total	819.8	202.8	184.6	158.4	165.4	248.2	256.5	2149.7	4185.4
PB 2013 Total	821.6	202.8	207.6	174.6	150.3	234.9	371.3	2049.4	4212.5
Delta	-1.8	0.0	-23.0	-16.2	15.1	13.3	-114.8	100.3	-27.1

Due to testing delays, System Verification Review has changed from June 2013 to November 2013. Based on this, the Program Manager’s current estimate for Milestone (MS) C is now January 2014. The FY 2014 President’s Budget (PB) shifts Air Force (AF) production funding by one year. There is no change to the Department of Navy (DoN) production start in FY 2017. This AF shift realigns the AF and DoNs production funding to the quantity profile established at MS B since DoN previously shifted their production profile one year due to F-35 delays. The changes do not affect F-15E Required Assets Available which remains on track for July 2016.

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
Development	163	0	0	0	0	0	0	0	0	163
Production	0	0	144	144	250	390	550	1050	14472	17000
PB 2014 Total	163	0	144	144	250	390	550	1050	14472	17163
PB 2013 Total	163	0	144	250	390	460	390	1650	13716	17163
Delta	0	0	0	-106	-140	-70	160	-600	756	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	--	--	--	--	--	--	133.9
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**	**--**	**--**	**--**	**--**	**--**	**1157.5**

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	--	--	--	--	--	--	125.0
2011	--	--	--	--	--	--	96.9
2012	--	--	--	--	--	--	127.2
2013	--	--	--	--	--	--	132.9
2014	--	--	--	--	--	--	104.9
2015	--	--	--	--	--	--	48.3
2016	--	--	--	--	--	--	15.8
2017	--	--	--	--	--	--	55.2
2018	--	--	--	--	--	--	13.3
2019	--	--	--	--	--	--	15.3
2020	--	--	--	--	--	--	4.6
Subtotal	**136**	**--**	**--**	**--**	**--**	**--**	**1109.6**

The total 3600 funding amount is lower than the SDB FY 2014 President's Budget Research, Development, Test and Evaluation (RDT&E) budget justification document because the RDT&E budget justification document includes funding for Small Diameter Bomb Increment I (SDB I) initiatives.

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	--	--	--	--	--	--	8.8
2006	--	--	--	--	--	--	11.7
2007	--	--	--	--	--	--	9.7
2008	--	--	--	--	--	--	11.1
2009	--	--	--	--	--	--	15.8
2010	--	--	--	--	--	--	7.6
2011	--	--	--	--	--	--	13.4
2012	--	--	--	--	--	--	17.9
2013	--	--	--	--	--	--	17.8
2014	--	--	--	--	--	--	27.3
2015	--	--	--	--	--	--	33.0
2016	--	--	--	--	--	--	45.4
2017	--	--	--	--	--	--	63.8
2018	--	--	--	--	--	--	68.8
2019	--	--	--	--	--	--	96.9
2020	--	--	--	--	--	--	29.1
Subtotal	**27**	**--**	**--**	**--**	**--**	**--**	**478.1**

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	--	--	--	--	--	--	9.6
2006	--	--	--	--	--	--	12.4
2007	--	--	--	--	--	--	10.0
2008	--	--	--	--	--	--	11.2
2009	--	--	--	--	--	--	15.8
2010	--	--	--	--	--	--	7.5
2011	--	--	--	--	--	--	12.9
2012	--	--	--	--	--	--	16.8
2013	--	--	--	--	--	--	16.4
2014	--	--	--	--	--	--	24.7
2015	--	--	--	--	--	--	29.3
2016	--	--	--	--	--	--	39.6
2017	--	--	--	--	--	--	54.6
2018	--	--	--	--	--	--	57.8
2019	--	--	--	--	--	--	79.9
2020	--	--	--	--	--	--	23.5
Subtotal	**27**	**--**	**--**	**--**	**--**	**--**	**422.0**

The total 1319 funding amount is lower than the FY 2014 President's Budget Research, Development, Test & Evaluation (RDT&E) budget justification document for Program Element 0604329N because the RDT&E budget justification document includes funding for the Joint Miniature Munitions Bomb Rack Unit and the SDB II weapon. In addition, prior year funding on the RDT&E budget justification document includes funding for Joint Surface Warfare, Hard Target Void Sensing Fuze, and Weapon Data Link Network.

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	37.9	2.8	--	40.7	1.3	42.0
2014	144	37.9	3.2	--	41.1	1.2	42.3
2015	250	48.0	5.0	--	53.0	18.4	71.4
2016	390	67.3	6.4	--	73.7	28.3	102.0
2017	460	58.7	5.2	--	63.9	30.9	94.8
2018	300	33.8	2.9	--	36.7	36.8	73.5
2019	900	112.7	7.0	--	119.7	25.3	145.0
2020	1968	235.9	9.5	--	245.4	28.1	273.5
2021	1968	235.9	9.5	--	245.4	22.8	268.2
2022	1968	235.9	7.0	--	242.9	22.3	265.2
2023	1968	235.9	7.0	--	242.9	20.4	263.3
2024	1540	190.4	5.6	--	196.0	23.4	219.4
Subtotal	**12000**	**1530.3**	**71.1**	**--**	**1601.4**	**259.2**	**1860.6**

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	34.5	2.5	--	37.0	1.2	38.2
2014	144	33.8	2.9	--	36.7	1.1	37.8
2015	250	42.0	4.4	--	46.4	16.1	62.5
2016	390	57.8	5.5	--	63.3	24.4	87.7
2017	460	49.5	4.4	--	53.9	26.1	80.0
2018	300	28.0	2.4	--	30.4	30.4	60.8
2019	900	91.5	5.7	--	97.2	20.6	117.8
2020	1968	188.0	7.6	--	195.6	22.4	218.0
2021	1968	184.5	7.4	--	191.9	17.9	209.8
2022	1968	181.1	5.4	--	186.5	17.1	203.6
2023	1968	177.7	5.3	--	183.0	15.4	198.4
2024	1540	140.8	4.1	--	144.9	17.3	162.2
Subtotal	**12000**	**1209.2**	**57.6**	**--**	**1266.8**	**210.0**	**1476.8**

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	17.5	1.0	--	18.5	7.1	25.6
2018	750	84.4	6.5	--	90.9	7.6	98.5
2019	750	93.9	6.8	--	100.7	7.6	108.3
2020	750	89.9	4.7	--	94.6	5.1	99.7
2021	750	89.9	4.7	--	94.6	5.2	99.8
2022	750	89.9	4.7	--	94.6	5.1	99.7
2023	750	89.9	4.6	--	94.5	5.0	99.5
2024	410	50.4	2.7	--	53.1	5.0	58.1
Subtotal	**5000**	**605.8**	**35.7**	**--**	**641.5**	**47.7**	**689.2**

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	14.8	0.8	--	15.6	6.1	21.7
2018	750	70.1	5.4	--	75.5	6.3	81.8
2019	750	76.5	5.5	--	82.0	6.3	88.3
2020	750	71.9	3.8	--	75.7	4.0	79.7
2021	750	70.6	3.7	--	74.3	4.0	78.3
2022	750	69.2	3.6	--	72.8	4.0	76.8
2023	750	67.9	3.5	--	71.4	3.8	75.2
2024	410	37.4	2.0	--	39.4	3.7	43.1
Subtotal	**5000**	**478.4**	**28.3**	**--**	**506.7**	**38.2**	**544.9**

Low Rate Initial Production

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

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the current SDB II acquisition strategy, which 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 Aquisition Program Baseline (APB) schedule dates will be updated.

Foreign Military Sales

Due to planned integration on the F-35 Joint Strike Fighter, international interest in SDB II is high. At this time, SDB II is not approved for Foreign Military Sales (FMS). The program was designated a candidate for the Defense Exportability Features pilot program. The program currently is investigating impacts of pursuing an FMS approved design. In the interim, the program office will continue to work with the Deputy Under Secretary of the Air Force for International Affairs (SAF/IA) to evaluate information requests for prospective foreign customers on a case-by-case basis, until final position of FMS is determined (projected 1st Quarter of FY 2014).

Nuclear Cost

None

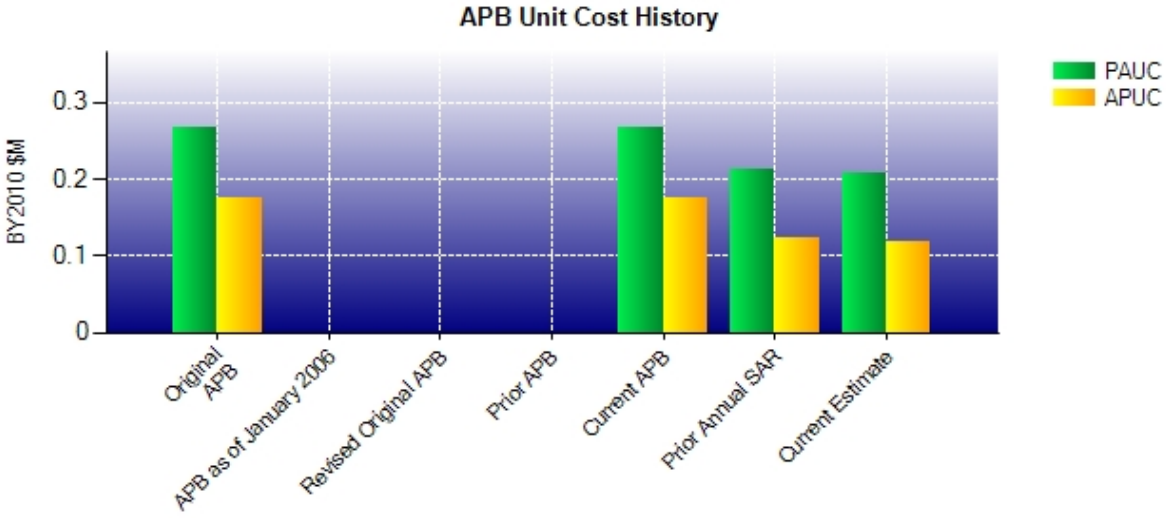
Unit Cost

Unit Cost Report

	BY2010 $M	BY2010 $M	
Unit Cost	**Current UCR Baseline (OCT 2010 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	4577.5	3553.3	
Quantity	17163	17163	
Unit Cost	0.267	0.207	-22.47
Average Procurement Unit Cost (APUC)			
Cost	2976.3	2021.7	
Quantity	17000	17000	
Unit Cost	0.175	0.119	-32.00

	BY2010 $M	BY2010 $M	
Unit Cost	**Original UCR Baseline (OCT 2010 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	4577.5	3553.3	
Quantity	17163	17163	
Unit Cost	0.267	0.207	-22.47
Average Procurement Unit Cost (APUC)			
Cost	2976.3	2021.7	
Quantity	17000	17000	
Unit Cost	0.175	0.119	-32.00

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 2011	0.213	0.124	0.245	0.151
Current Estimate	DEC 2012	0.207	0.119	0.244	0.150

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	0.009	0.000	0.001	0.000	-0.066	0.000	-0.004	-0.060	0.244

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	0.008	0.000	0.001	0.000	-0.063	0.000	-0.004	-0.058	0.150

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	JAN 2014
IOC	N/A	JUN 2018	N/A	SEP 2020
Total Cost (TY $M)	N/A	5210.4	N/A	4185.4
Total Quantity	N/A	17163	N/A	17163
Prog. Acq. Unit Cost (PAUC)	N/A	0.304	N/A	0.244

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1665.0	3545.4	--	5210.4
Previous Changes				
Economic	+14.9	+69.9	--	+84.8
Quantity	--	--	--	--
Schedule	--	+14.9	--	+14.9
Engineering	--	--	--	--
Estimating	-36.1	-1011.6	--	-1047.7
Other	--	--	--	--
Support	--	-49.9	--	-49.9
Subtotal	-21.2	-976.7	--	-997.9
Current Changes				
Economic	+11.3	+60.7	--	+72.0
Quantity	--	--	--	--
Schedule	--	-0.5	--	-0.5
Engineering	--	--	--	--
Estimating	-19.5	-64.7	--	-84.2
Other	--	--	--	--
Support	--	-14.4	--	-14.4
Subtotal	-8.2	-18.9	--	-27.1
Total Changes	-29.4	-995.6	--	-1025.0
CE - Cost Variance	1635.6	2549.8	--	4185.4
CE - Cost & Funding	1635.6	2549.8	--	4185.4

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	-52.2	-827.4	--	-879.6
Other	--	--	--	--
Support	--	-43.7	--	-43.7
Subtotal	-52.2	-871.1	--	-923.3
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-20.2	--	-20.2
Engineering	--	--	--	--
Estimating	-17.4	-52.7	--	-70.1
Other	--	--	--	--
Support	--	-10.6	--	-10.6
Subtotal	-17.4	-83.5	--	-100.9
Total Changes	-69.6	-954.6	--	-1024.2
CE - Cost Variance	1531.6	2021.7	--	3553.3
CE - Cost & Funding	1531.6	2021.7	--	3553.3

Previous Estimate: December 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+11.3
Revised estimate for Program Office support costs. (Air Force) (Estimating)	-2.0	-2.2
Revised estimate for Program Office support costs. (Navy) (Estimating)	-12.5	-14.3
Revised estimate to reflect actuals. (Navy) (Estimating)	-1.1	-1.1
Adjustment for current and prior escalation. (Estimating)	-1.8	-1.9
RDT&E Subtotal	-17.4	-8.2

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+60.7
Stretch-out of procurement buy profile from FY 2023 to FY 2024 (Air Force). (Schedule)	0.0	+25.4
Additional schedule variance to reflect contractor's original option pricing (Air Force). (Schedule)	-20.2	-26.8
Stretch-out of procurement buy profile due to 410 weapons being moved from FY 2023 to FY 2024 (Navy). (Schedule)	0.0	+0.9
Revised estimate for reliability testing (Air Force). (Estimating)	-11.6	-13.9
Revised estimate for engineering change orders (Navy). (Estimating)	+3.4	+4.3
Adjustment for current and prior escalation. (Estimating)	-0.7	-0.8
Revised estimate to reflect application of new inflation indices (Air Force). (Estimating)	-32.2	-40.5
Revised estimate to reflect application of new inflation indices (Navy). (Estimating)	-8.4	-10.3
Revised estimate for weapon containers (Navy). (Estimating)	+0.3	+0.4
Reduction in weapon unit cost due to change in Air Force production schedule (Navy). (Estimating)	-3.5	-3.9
Decrease in Other Support Costs for reliability testing (Air Force). (Support)	-15.5	-20.8
Increase in Other Support Costs due to one year production extension (Navy). (Support)	+4.9	+6.4
Procurement Subtotal	-83.5	-18.9

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	462.8	474.7

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/24/2013)	-16.1	-12.6
Previous Cumulative Variances	-2.1	-2.0
Net Change	-14.0	-10.6

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to Raytheon Missile System’s addition of resources to execute an aggressive test tempo leading to a System Verification Review by November 2013.

The unfavorable net change in the schedule variance is due to delays associated with the build up and qualification testing of the production representative hardware and execution of the flight test program.

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 Demonstration schedule. The additional test effort and F-35 JSF schedule changes were not included in the original request for proposal and will require modification 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	4185.4	Years Appropriated	9
Expenditures To Date	701.9	Percent Years Appropriated	45.00%
Percent Expended	16.77%	Appropriated to Date	1022.6
Total Funding Years	20	Percent Appropriated	24.43%

The above data is current as of 3/31/2013.

The Government does not take delivery of the 163 developmental test assets.

Operating and Support Cost

SDB II

Assumptions and Ground Rules

Cost Estimate Reference:

The Air Force SDB II Operating & Support (O&S) cost estimate was completed by the Air Force Cost Analysis Agency, in support of the Milestone (MS) B decision, in May 2010. The Department of Navy O&S cost estimate was completed by the Naval Air Systems Command (NAVAIR) Cost Department Acquisition Cost Estimating Division (NAVAIR 4.2.1) in support of the MS B decision in May 2010.

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:

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.

Unitized O&S Costs BY2010 $M		
Cost Element	**SDB II Average Total Inventory Cost Per Year**	**No Antecedent (Antecedent) N/A**
Unit-Level Manpower	1.7	0.0
Unit Operations	0.0	0.0
Maintenance	10.5	0.0
Sustaining Support	20.1	0.0
Continuing System Improvements	11.3	0.0
Indirect Support	1.3	0.0
Other	0.8	0.0
Total	45.7	--

Unitized Cost Comments:

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

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

Total O&S Costs Comments:

The current estimate is lower than the Acquisition Program Baseline (APB) because the APB O&S total included disposal costs.

Disposal Costs

The current estimate for demilitarization and disposal of SDB II weapons is $58.8 million (base year).