

UNCLASSIFIED



Selected Acquisition Report (SAR)

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



Small Diameter Bomb Increment II (SDB II)

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

UNCLASSIFIED

Table of Contents

Sensitivity Originator	3
Common Acronyms and Abbreviations for MDAP Programs	4
Program Information	6
Responsible Office	6
References	7
Mission and Description	8
Executive Summary	9
Threshold Breaches	12
Schedule	13
Performance	15
Track to Budget	21
Cost and Funding	21
Low Rate Initial Production	37
Foreign Military Sales	38
Nuclear Costs	38
Unit Cost	39
Cost Variance	42
Contracts	45
Deliveries and Expenditures	49
Operating and Support Cost	50

Sensitivity Originator

No originator info Available at this time.

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)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Small Diameter Bomb Increment II (SDB II)

DoD Component

Air Force

Joint Participants

Department of the Navy

Responsible Office

Col Jason Rusco
102 West D Ave
Eglin Air Force Base, FL 32542

jason.rusco@us.af.mil

Phone: 850-883-2881

Fax: 850-882-2438

DSN Phone: 875-2881

DSN Fax: 872-2438

Date Assigned: May 31, 2018

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 23, 2015

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 23, 2015

Mission and Description

Small Diameter Bomb Increment II (SDB II), StormBreaker, is a joint interest Air Force (AF) and Navy ACAT IC program, with the AF as the lead service. SDB II provides the warfighter the capability to attack mobile targets from stand-off, through adverse weather. The threshold aircraft for the AF is the F-15E and the threshold aircraft for the Navy 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, MQ-9, and AC-130. SDB II will be compatible with the BRU-61 (Bomb Rack Unit) miniature munitions carriage, the CNU-660/E (Container Miscellaneous Unit) 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-weapon AF storage container and a dual Navy weapon storage container.

Executive Summary

Program Highlights Since Last Report

Developmental Test (DT), including Government Confidence Test (GCT) completed in May 2018. Air Force Operational Test and Evaluation Center began Operational Test (OT) in June 2018 and has executed 35 of 56 mission scenarios. To date, the program has completed 124 weapon drops with 111 guided tests. On November 8, 2018, the Joint Reliability and Maintainability Evaluation Team (JRMET)/Technical Data Scoring Board (TDSB) met and scored successful 17 of 20 OT mission scenarios for a demonstrated free flight reliability of 85%. Total inventory is 598 weapons. LRIP Lot 2 delivery of 250/250 weapons is complete and met all contractual delivery milestones. LRIP Lot 3 September 2018 and are expected to complete by June 2019.

F-15E Required Assets Available (RAA) requirements for SDB II are outlined in the CDD. In September 2018, the SDB II program office evaluated the CDD and determined that SDB II had met all requirements for F-15E RAA. However, a January 2019 review of the weapon's OT performance highlighted the need for a software update to address issues with weapon datalink communications and crypto codes. The timeline of this update necessitated a schedule deviation to RAA declaration from the APB. The previous threshold date for RAA was January 2019. The PEO submitted a Program Deviation Report to the MDA on February 1, 2019. An updated APB is in coordination with a revised RAA objective of August 2019 and threshold of August 2020.

Quarterly Activity:

January – March 2018: An Integrated Engineering Change Proposal, which includes M-Code (Military Code) Global Positioning System (GPS) and Enhanced Anti-jam Development, was awarded for \$101.5M as part of a \$450M (ceiling) Indefinite Delivery Indefinite Quantity contract. Software Maintenance Build (SWM) 3 (Operational Flight Program 07.03.07) was released and submitted for flight clearance. SWM 3 is the Operational Flight Program (OFP) for completion of GCT and entrance into OT. Physical Configuration Audit (PCA) on Lot 2 All-up-rounds started with the seeker section build. The program exercised the LRIP Lot 4 contract option for \$77.3M. The first FMS Letter of Acceptance was signed by Australia for test assets and three years of support.

Test Activity: The last set of GCT ripple release missions were successfully demonstrated. Two GCT Vehicles (GCTV) were successfully executed demonstrating against a static target and Energy Burn Trajectory (spiral mode). The first Laser Illuminated Attack (LIA) Live Fire (LF) mission was successfully executed against a moving target.

April – June 2018: An additional 90 Navy weapons were added to the Lot 4 contract for a total of 660 weapons (570 Air Force, 90 Navy) with a contract value of \$85.9M. The team completed an Integrated Baseline Review establishing the program baseline as executable.

Test Activity: Two GCTVs were successfully executed on a single sortie demonstrating immediate attack capability against moving targets. One Coordinate Attack (CA) and one LIA were successfully executed demonstrating the first use of SWM 3 software in the CA and LIA modes. These were the last two shots required to complete GCT. The Operational Test Readiness Review was successfully conducted and the PEO certified the program to enter OT. OT began in June with of five Normal Attack (NA) mission scenarios.

July – September 2018: A Request for Proposal was released to Raytheon Missile Systems for Lot 6 production with an option for Lot 7. The first 20 LRIP Lot 2 Production Reliability Incentive Demonstration Effort (PRIDE) assets were delivered to Eglin. LRIP Lot 3 deliveries began this quarter.

Test Activity: The first round of F-35 software in the loop testing to include initialization, targeting, and release was successfully completed. Three CA, three NA, and one Joint Terminal Attack Controller (JTAC) LIA OT mission scenarios were executed. Two static land LF warhead tests against utility boats were successfully conducted at Eglin Range. Two additional LIA OT mission scenarios and four NA OT scenarios were conducted.

October – December 2018: LRIP Lot 3 deliveries met contractual requirements for December 2018 and are expected to complete by June 2019. The program executed the LRIP Lot 5 contract option for 1,260 weapons valued at \$141M.

Test Activity: Four LIA and four NA OT scenarios were conducted. F/A-18E/F wind tunnel testing was completed. The JRMET/TDSB met in November and scored successful 17 of 20 mission scenarios for a demonstrated free flight reliability of 85%. Three were scored as failures (one CA and two NA scenarios). Failure Review Boards (FRB) were convened for the CA (OT-54) and one of the NA (OT-22) failures. has been determined and corrective actions are in work. The other NA failure did not require an FRB and no corrective actions were required. PRIDE captive flight testing started. Four additional NA ripple release scenarios were conducted. Preliminary data indicated all four successful and will be scored at next JRMET/TDSB. In December, two NA JTAC OT scenarios were conducted. Preliminary data indicated both missed their intended target and are under review. The next series of OT shots will take place at the end of January 2019.

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

History of Significant Developments Since Program Initiation	
History of Significant Developments Since Program Initiation	
Date	Significant Development Description
July 2009	JROC approved the SDB II CDD.
August 2010	DAE signed an ADM authorizing the program to enter the EMD phase and certified the program pursuant to section 2366b of title 10, U.S. Code.
October 2010	DAE signed the Milestone (MS) B APB.
January 2011	Conducted the Critical Design Review (CDR). 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."
July 2012	First Guided Test Vehicle (GTV)-1 flight test.
November 2014	First Live Fire test.
December 2014	Test, Analyze and Fix (TAAF) testing complete, culminating over 18 months of testing that totaled 2,190 hours. TAAF demonstrated a reliability of 253 hours Mean Time Between Failure which surpassed the 250 hour requirement.
January 2015	JROC approved use of SDB II CDD in lieu of CPD for production Milestone C. They also formally added the AC-130 as an objective aircraft.
April 2015	Systems Verification Review.
June 2015	DAE signed the Milestone C ADM authorizing entrance into LRIP.
June 2015	Lot 1 Production contract award for the first 144 weapons.
September 2015	DAE signed the Milestone C APB. The APB included updated F-15E Required Asset Available dates to account for previous program delays and to allow sufficient time for the remaining Developmental Testing and the upcoming Operational Testing.

Threshold Breaches

APB Breaches

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

Explanation of Breach

The schedule deviation for F-15E Required Assets Available (RAA) is January 2019 in the APB. RAA requirements for SDB II are outlined in the CDD. In September 2018, the SDB II program office evaluated the CDD and determined that SDB II has met all requirements for F-15E RAA. However, a January 2019 review of the weapon's OT performance highlighted the need for a software update to address issues with weapon datalink communications and crypto codes. The timeline of this update necessitates a deviation to RAA declaration from the APB. The PEO submitted a Program Deviation Report to the MDA on February 1, 2019. An updated APB is in coordination with a revised objective of August 2019 and threshold of August 2020.

Nunn-McCurdy Breaches

Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B Approval	Aug 2010	Aug 2010	Aug 2010	Jul 2010
Milestone C Approval	May 2015	May 2015	May 2015	May 2015
RAA for SDB II-Threshold Aircraft F-15E	Jan 2018	Jan 2018	Jan 2019	Aug 2019¹
F-35B Initial Fielding	Jan 2022	Jan 2022	Jan 2023	Sep 2022
F-35C Initial Fielding	Jan 2022	Jan 2022	Jan 2023	Sep 2022
Full Rate Production	Apr 2022	Apr 2022	Apr 2023	Sep 2022

(Ch-1)

¹ APB Breach

Change Explanations

(Ch-1) The current estimate for RAA for SDB II-Threshold Aircraft F-15E changed from January 2019 to August 2019 due to ongoing analysis to confirm proposed corrective actions for performance discoveries found during operational test.

Notes

F-15E Required Assets Available (RAA) requirements for SDB II are outlined in the CDD. In September 2018, the SDB II program office evaluated the CDD and determined that SDB II had met all requirements for F-15E RAA. However, a January 2019 review of the weapon's OT performance highlighted the need for a software update to address issues with weapon datalink communications and crypto codes. The timeline of this update necessitated a schedule deviation to RAA declaration from the APB. The previous threshold date for RAA was January 2019. The PEO submitted a Program Deviation Report to the MDA on February 1, 2019. An updated APB is in coordination with a revised RAA objective of August 2019 and threshold of August 2020.

RAA for SDB II Threshold Aircraft F-15E is defined as the capability to arm twelve F-15Es with two fully-loaded BRU-61 carriage systems 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 ACC Commander, or applicable Major Command Commander (if 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 threshold dates for FRP, F-35B Initial Fielding, and F-35C Initial Fielding are one year beyond the objective dates due to the fluidity of the F-35 program schedule.

In FY 2013, the Navy adjusted the platform integration strategy by of F/A-18E/F to deliver the multi-mode moving target capability to the warfighter ahead of the F-35. This strategy was approved and supported by OSD. The first Navy unit equipped will be an F/A-18E/F squadron aircraft. The quantity of SDB II weapons required for Navy Initial Fielding is 90 weapons.

Acronyms and Abbreviations

ACC - Air Combat Command
BRU - Bomb Rack Units
GCT - Government Confidence Testing
OT - Operational Test
PEO - Program Executive Officer
RAA - Required Assets Available

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production 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. The Joint JROC reviewed the CDD in lieu of the CPD on November 18, 2014; the JROC subsequently signed the memorandum on January 13, 2015.	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. The Joint JROC reviewed the CDD in lieu of the CPD on November 18, 2014; the JROC subsequently signed the memorandum on January 13, 2015.	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 (T-1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014; the JROC subsequently signed the memorandum on January 13, 2015.	Demonstrated performance data will be displayed when SDB II completes OT, AFOTEC provides the final report and analysis is completed.	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 (T-1) when averaged over all the target types contained in Table 6-1 of CDD for SDB II dated July 28, 2009. 1. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014; the JROC subsequently signed the memorandum on January 13, 2015.
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.	(T=O) 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 have been integrated onto the BRU-61/A. Aircraft have carried and employed both SDB I and SDB II weapons loaded on separate BRU-61/As during	Performance has been demonstrated.

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 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 contamination, corrosive atmosphere, fungus, humidity, ice, and rain environments of aircraft carrier and replenishment ship operations.

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 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.

(T=O) 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 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.

Demonstrated performance data will be displayed when SDB II completes F-35C OT, AFOTEC provides the final report and analysis is completed.

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 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

Demonstrated performance data will be collected and displayed when

The Materiel Availability for SDB II will follow this graduated scale: Greater than 500

		than .75 Greater than 1,000 weapons in inventory - no less than .80 Greater than 3,000 weapons in inventory - no less than .90.	500 weapons are placed in inventory and available for use.	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

<p>I) Support net-centric military operations: A) Mission: Positive weapon control during engagement of mobile (moving and stationary) targets enabled by digital communications as planned and/or event-driven. 1) Measure: Receipt of weapon control directives = less than or equal to 12 seconds (Link 16); Transmission of situation awareness messages = less than or equal to 30 seconds UHF. 2) Conditions: Secure and available communications (DoD Chief Information Officer net-centric attribute). B) Mission Activities: Enable target acquisition; Target tracking. 1) Measure: Link 16 Target location accuracy** = 60 meters TLE90 and UHF** = 100 meters TLE90. 2) Conditions: SWE and WE conditions. II) Enter and be managed in the network: A) Link 16 tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal performance = 99% availability; Messaging =</p>	<p>I) Support net-centric military operations: A) Mission: Positive weapon control during engagement of mobile (moving and stationary) targets enabled by digital communications as planned and/or event-driven. 1) Measure: Receipt of weapon control directives = less than or equal to 12 seconds (Link 16); Transmission of situation awareness messages = less than or equal to 30 seconds UHF. 2) Conditions: Secure and available communications (DoD Chief Information Officer net-centric attribute). B) Mission Activities: Enable target acquisition; Target tracking. 1) Measure: Link 16 Target location accuracy** = 60 meters TLE90 and UHF** = 100 meters TLE90. 2) Conditions: SWE and WE conditions. II) Enter and be managed in the network: A) Link 16 tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal performance = 99% availability; Messaging =</p>	<p>(T=O) I) Support net-centric military operations: A) Mission: Positive weapon control during engagement of mobile (moving and stationary) targets enabled by digital communications as planned and/or event-driven. 1) Measure: Receipt of weapon control directives = less than or equal to 12 seconds (Link 16); Transmission of situation awareness messages = less than or equal to 30 seconds UHF. 2) Conditions: Secure and available communications (DoD Chief Information Officer net-centric attribute). B) Mission Activities: Enable target acquisition; Target tracking. 1) Measure: Link 16 Target location accuracy** = 60 meters TLE90 and UHF** = 100 meters TLE90. 2) Conditions: SWE and WE conditions. II) Enter and be managed in the network: A) Link 16 tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal performance = 99%</p>	<p>Demonstrated performance data will be displayed when SDB II completes OT, AFOTEC provides the final report and analysis is completed.</p>	<p>I) Support net-centric military operations: A) Mission: Positive weapon control during engagement of mobile (moving and stationary) targets enabled by digital communications as planned and/or event-driven. 1) Measure: Receipt of weapon control directives = less than or equal to 12 seconds (Link 16); Transmission of situation awareness messages = less than or equal to 30 seconds UHF. 2) Conditions: Secure and available communications (DoD Chief Information Officer net-centric attribute). B) Mission Activities: Enable target acquisition; Target tracking. 1) Measure: Link 16 Target location accuracy = 60 meters TLE90 and UHF = 100 meters</p>
--	--	--	--	---

<p>MER of less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; Spectrum availability. B) Line-of-sight UHF tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal Performance = 99% availability; Messaging = MER less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; spectrum availability. III) Exchange Information: A) Link 16 weapon control: 1) Measure: Periodicity*** = less than or equal to 12 seconds; Timeliness**** = less than or equal to 3 seconds; Throughput***** = 53.76 kilobits per second; Size***** = 0.56 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. B) UHF weapon control JTAC2: 1) Measure: Periodicity***** = less than or equal to 30 seconds; Timeliness***** = less than or equal to 6 seconds; Throughput***** = 16 kilobits per second; Size***** = 1.12 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. C) Link 16 precise participant location and identification TDL 1: 1) Measure:</p>	<p>MER of less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; Spectrum availability. B) Line-of-sight UHF tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal Performance = 99% availability; Messaging = MER less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; spectrum availability. III) Exchange Information: A) Link 16 weapon control: 1) Measure: Periodicity*** = less than or equal to 12 seconds; Timeliness**** = less than or equal to 3 seconds; Throughput***** = 53.76 kilobits per second; Size***** = 0.56 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. B) UHF weapon control JTAC2: 1) Measure: Periodicity***** = less than or equal to 30 seconds; Timeliness***** = less than or equal to 6 seconds; Throughput***** = 16 kilobits per second; Size***** = 1.12 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. C) Link 16 precise participant location and identification TDL 1: 1) Measure:</p>	<p>availability; Messaging = MER of less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; Spectrum availability. B) Line-of-sight UHF tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal Performance = 99% availability; Messaging = MER less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; spectrum availability. III) Exchange Information: A) Link 16 weapon control: 1) Measure: Periodicity*** = less than or equal to 12 seconds; Timeliness**** = less than or equal to 3 seconds; Throughput***** = 53.76 kilobits per second; Size***** = 0.56 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. B) UHF weapon control JTAC2: 1) Measure: Periodicity***** = less than or equal to 30 seconds; Timeliness***** = less than or equal to 6 seconds; Throughput***** = 16 kilobits per second; Size***** = 1.12 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available. C) Link 16 precise participant location and identification</p>	<p>TLE90. 2) Conditions: SWE and WE conditions. II) Enter and be managed in the network: A) Link 16 tactical data link network. 1) Measure: Time to fine synchronization = less than or equal to 60 seconds; Terminal performance = 99% availability; Messaging = MER of less than or equal to 1%. 2) Conditions: Operational network; Type 1 encryption; Spectrum availability. B) Line-of-sight UHF tactical data link network. 1) Measure: Time to fine 2) Conditions: Operational network; Type 1 encryption; spectrum availability. III) Exchange Information: A) Link 16 weapon control: 1) Measure: Periodicity = less than or equal to 12 seconds; Timeliness = less than or equal to 3 seconds; Throughput = 53.76 kilobits per second; Size = 0.56 kilobits. 2) Conditions: Operational network; Type I encryption; Required</p>
---	---	--	--

Periodicity***** = less than or equal to 12 seconds;
 Timeliness***** = less than or equal to 3 seconds;
 Throughput***** = 53.76 kilobits per second;
 Size***** = 0.315 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available.

Periodicity***** = less than or equal to 12 seconds;
 Timeliness***** = less than or equal to 3 seconds;
 Throughput***** = 53.76 kilobits per second;
 Size***** = 0.315 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available.

(TDL 1): 1) Measure: Periodicity***** = less than or equal to 12 seconds;
 Timeliness***** = less than or equal to 3 seconds;
 Throughput***** = 53.76 kilobits per second;
 Size***** = 0.315 kilobits. 2) Conditions: Operational network; Type I encryption; Required spectrum is available.

spectrum is available. B) UHF weapon control JTAC2: 1) Measure Periodicity = less than or equal to 30 seconds;
 Timeliness = less than or equal to 6 seconds;
 Throughput = 16 kilobits per second; Size = 1.12 kilobits. 2) Conditions: Operational network; Type 1 encryption; Required spectrum is available. C) Link 16 precise participant location and identification TDL 1: 1) Measure: Periodicity = less than or equal to 12 seconds;
 Timeliness = less than or equal to 3 seconds;
 Throughput = 53.76 kilobits per second; Size = 0.315 kilobits. 2) Conditions: Operational network; Type 1 encryption; Required spectrum is available.

Weapon Effectiveness

Given meeting the threshold of WE the SDB II will achieve a minimum PSSK of (O-3), when averaged over various environmental/threat condition cases listed in Appendix F of CDD for

Given meeting the threshold of WE the SDB II will achieve a minimum PSSK of (O-3), when averaged over various environmental/threat condition cases listed in Appendix F of CDD for

SDB II will achieve a minimum PSSK of (T-3) for each target type (Table 6-1 of CDD for SDB II dated July 28, 2009) in each environmental/threat condition case listed in

Demonstrated performance data will be displayed when SDB II completes OT, AFOTEC provides the

SDB II will achieve a minimum PSSK of (T-3) for each target type (Table 6-1 of CDD for SDB II dated July 28, 2009) in each environmental/

SDB II dated July 28, 2009. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014, the JROC subsequently signed the memorandum on January 13, 2015.	SDB II dated July 28, 2009. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014, the JROC subsequently signed the memorandum on January 13, 2015.	Appendix F of CDD for SDB II dated July 28, 2009. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014, the JROC subsequently signed the memorandum on January 13, 2015.	final report and analysis is completed.	threat condition case listed in Appendix F of CDD for SDB II dated July 28, 2009. The JROC reviewed the CDD in lieu of the CPD on November 18, 2014; the JROC subsequently signed the memorandum on January 13, 2015.
---	---	---	---	---

Requirements Reference

Miniature Munitions Capability ORD dated April 8, 2005, CDD dated July 28, 2009, and JROC Memorandum dated January 13, 2015

Change Explanations

None

Notes

Threshold aircraft is defined as F-15E for the Air Force and F-35B and F-35C for the Navy. Program schedule for the Air Force will not be delayed due to availability of the F-35B and F-35C. Both targeting methods (threshold aircraft or JTAC) must be employed in any combination to achieve an average over the target set.

Acronyms and Abbreviations

AFOTEC - Air Force Operational Test & Evaluation Center
 BRU - Bomb Rack Unit
 EMC - Electromagnetic Compatibility
 EMI - Electromagnetic Interference
 JTAC - Joint Terminal Attack Controller
 MER - Message Error Rate
 OB - Objective
 PSSK - Probability of Single Shot Kill
 SWE - Scenario Weapon Effectiveness
 T - Threshold
 TDL - Tactical Data Link
 TLE - Target Location Error
 UHF - Ultra High Frequency
 WE - Weapon Effectiveness

Track to Budget

RDT&E

Appn	BA	PE	
Navy	1319	05	0604329N
	Project	Name	
	3072	Small Diameter Bomb (Shared)	
Air Force	3600	05	0604329F
	Project	Name	
	655191	Small Diameter Bomb Increment II	

Procurement

Appn	BA	PE	
Navy	1507	02	0204162N
	Line Item	Name	
	2238	Small Diameter Bomb II	
Air Force	3020	02	0207327F
	Line Item	Name	
	SDB000	Small Diameter Bomb (Shared)	
	Notes:	Until FY 2018	
	SDB002	Small Diameter Bomb II	
	Notes:	FY 2019 on	

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2015 \$M			BY 2015 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1678.1	1678.1	1845.9	1810.2	1648.9	1648.9	1801.6
Procurement	2376.8	2376.8	2614.5	2432.8	2792.0	2792.0	2850.3
Flyaway	--	--	--	2116.5	--	--	2488.8
Recurring	--	--	--	2116.5	--	--	2488.8
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	316.3	--	--	361.5
Other Support	--	--	--	316.3	--	--	361.5
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	4054.9	4054.9	N/A	4243.0	4440.9	4440.9	4651.9

Current APB Cost Estimate Reference

Joint Air Force / Navy Service Cost Position dated April 29, 2015

Cost Notes

The APB covers the SDB II weapon system which consists of the Guided Bomb Unit (GBU)-53/B munition, mission planning and logistics system, and associated containers.

If an Independent Cost Estimate, Component Cost Estimate, or Program Office Estimate has been completed for the program in the previous year, list any program risks identified in the estimates, the potential impacts of the risks on program cost, and approaches to mitigate the risks.

An annual Program Office Estimate and a POM NACA (Non-Advocate Cost Analysis) are completed each year.

RDT&E:

Crypto Modernization – Risk Rating Low/Medium which added 13% for mitigation

M-Code Integration– Risk Rating Low/Medium which added 14% for mitigation

Lot Integration Testing (LIT) – Risk Rating Low/Medium which added 14% for mitigation

NOTE: M-Code and LIT are included in the POE and shown in the current SAR cost estimate, but are not part of the MS C APB.

Production:

Production – Risk Rating at MS C - Low/Medium to Medium which added 10% for mitigation; there have been no changes to those risk assumptions to date

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

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2020 President's Budget / December 2018 SAR (TY\$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	1399.3	143.3	77.3	76.2	45.8	31.3	28.4	0.0	1801.6
Procurement	328.4	192.2	330.7	448.0	425.2	441.6	341.4	342.8	2850.3
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 2020 Total	1727.7	335.5	408.0	524.2	471.0	472.9	369.8	342.8	4651.9
PB 2019 Total	1706.1	338.0	435.7	524.4	470.9	472.8	411.4	266.0	4625.3
Delta	21.6	-2.5	-27.7	-0.2	0.1	0.1	-41.6	76.8	26.6

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	163	0	0	0	0	0	0	0	0	163
Production	0	1366	1260	1925	2910	2718	2832	2065	1924	17000
PB 2020 Total	163	1366	1260	1925	2910	2718	2832	2065	1924	17163
PB 2019 Total	163	1319	1260	1925	2910	2718	2832	2718	1318	17163
Delta	0	47	0	0	0	0	0	-653	606	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	--	--	--	--	--	--	65.9
2016	--	--	--	--	--	--	28.0
2017	--	--	--	--	--	--	39.0
2018	--	--	--	--	--	--	37.6
2019	--	--	--	--	--	--	78.2
2020	--	--	--	--	--	--	31.2
2021	--	--	--	--	--	--	17.3
2022	--	--	--	--	--	--	27.4
2023	--	--	--	--	--	--	27.9
2024	--	--	--	--	--	--	28.4
Subtotal	136	--	--	--	--	--	1344.3

Annual Funding 3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2015 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	28.4
2007	--	--	--	--	--	--	103.0
2008	--	--	--	--	--	--	153.2
2009	--	--	--	--	--	--	116.0
2010	--	--	--	--	--	--	135.3
2011	--	--	--	--	--	--	105.0
2012	--	--	--	--	--	--	143.2
2013	--	--	--	--	--	--	126.9
2014	--	--	--	--	--	--	109.7
2015	--	--	--	--	--	--	65.3
2016	--	--	--	--	--	--	27.3
2017	--	--	--	--	--	--	37.3
2018	--	--	--	--	--	--	35.2
2019	--	--	--	--	--	--	71.8
2020	--	--	--	--	--	--	28.1
2021	--	--	--	--	--	--	15.3
2022	--	--	--	--	--	--	23.7
2023	--	--	--	--	--	--	23.7
2024	--	--	--	--	--	--	23.6
Subtotal	136	--	--	--	--	--	1372.0

The FY 2020 BES included a 2024 baseline extension of \$28.4M.

FY 2019 includes a \$5M congressional add for precise navigation.

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	--	--	--	--	--	--	11.2
2016	--	--	--	--	--	--	28.4
2017	--	--	--	--	--	--	37.6
2018	--	--	--	--	--	--	57.6
2019	--	--	--	--	--	--	65.1
2020	--	--	--	--	--	--	46.1
2021	--	--	--	--	--	--	58.9
2022	--	--	--	--	--	--	18.4
2023	--	--	--	--	--	--	3.4
Subtotal	27	--	--	--	--	--	457.3

Annual Funding 1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2015 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	10.4
2006	--	--	--	--	--	--	13.4
2007	--	--	--	--	--	--	10.8
2008	--	--	--	--	--	--	12.2
2009	--	--	--	--	--	--	17.1
2010	--	--	--	--	--	--	8.1
2011	--	--	--	--	--	--	13.9
2012	--	--	--	--	--	--	18.3
2013	--	--	--	--	--	--	16.8
2014	--	--	--	--	--	--	18.0
2015	--	--	--	--	--	--	11.0
2016	--	--	--	--	--	--	27.5
2017	--	--	--	--	--	--	35.8
2018	--	--	--	--	--	--	53.7
2019	--	--	--	--	--	--	59.5
2020	--	--	--	--	--	--	41.3
2021	--	--	--	--	--	--	51.7
2022	--	--	--	--	--	--	15.8
2023	--	--	--	--	--	--	2.9
Subtotal	27	--	--	--	--	--	438.2

Includes weapon development only; does not include rack development.

Reduction in funding for FY 2019 and FY 2020 due to higher Navy priority programs.

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	34.1	0.5	--	34.6	0.5	35.1	
2016	250	43.2	1.0	--	44.2	21.8	66.0	
2017	375	77.9	1.2	--	79.1	21.3	100.4	
2018	507	50.4	0.6	--	51.0	54.9	105.9	
2019	510	60.7	1.8	--	62.5	38.4	100.9	
2020	1175	176.1	3.7	--	179.8	32.7	212.5	
2021	2160	286.5	6.8	--	293.3	40.2	333.5	
2022	1968	283.0	6.7	--	289.7	18.4	308.1	
2023	2082	288.1	7.2	--	295.3	26.7	322.0	
2024	1315	198.7	4.8	--	203.5	16.0	219.5	
2025	1514	233.7	5.6	--	239.3	28.1	267.4	
Subtotal	12000	1732.4	39.9	--	1772.3	299.0	2071.3	

Annual Funding								
3020 Procurement Missile Procurement, Air Force								
Fiscal Year	Quantity	BY 2015 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2015	144	33.1	0.5	--	33.6	0.5	34.1	
2016	250	41.2	1.0	--	42.2	20.8	63.0	
2017	375	72.7	1.1	--	73.8	19.9	93.7	
2018	507	46.1	0.5	--	46.6	50.2	96.8	
2019	510	54.4	1.6	--	56.0	34.5	90.5	
2020	1175	154.8	3.3	--	158.1	28.7	186.8	
2021	2160	246.9	5.9	--	252.8	34.6	287.4	
2022	1968	239.1	5.7	--	244.8	15.5	260.3	
2023	2082	238.6	6.0	--	244.6	22.1	266.7	
2024	1315	161.3	3.9	--	165.2	13.0	178.2	
2025	1514	186.0	4.5	--	190.5	22.4	212.9	
Subtotal	12000	1474.2	34.0	--	1508.2	262.2	1770.4	

The FY 2020 Budget Estimate Submission (BES) reduced the FY 2024 funding by \$78.7M which caused units to be moved to the final lot 11 in FY 2025.

FY 2017 includes funding for 63 units executed in FY 2018 with Lot 4.

FY 2018 realigned \$23M from SDB I to SDB II for obsolescence.

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	9.7	21.0
2019	750	78.7	2.7	--	81.4	9.9	91.3
2020	750	105.7	3.2	--	108.9	9.3	118.2
2021	750	102.0	3.2	--	105.2	9.3	114.5
2022	750	108.2	3.3	--	111.5	5.6	117.1
2023	750	109.7	3.3	--	113.0	6.6	119.6
2024	750	112.9	3.5	--	116.4	5.5	121.9
2025	410	66.8	2.0	--	68.8	6.6	75.4
Subtotal	5000	694.9	21.6	--	716.5	62.5	779.0

Annual Funding 1507 Procurement Weapons Procurement, Navy								
Fiscal Year	Quantity	BY 2015 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2018	90	10.0	0.4	--	10.4	8.9	19.3	
2019	750	70.7	2.4	--	73.1	9.0	82.1	
2020	750	93.2	2.8	--	96.0	8.2	104.2	
2021	750	88.1	2.8	--	90.9	8.0	98.9	
2022	750	91.7	2.8	--	94.5	4.7	99.2	
2023	750	91.1	2.7	--	93.8	5.5	99.3	
2024	750	91.9	2.8	--	94.7	4.5	99.2	
2025	410	53.3	1.6	--	54.9	5.3	60.2	
Subtotal	5000	590.0	18.3	--	608.3	54.1	662.4	

Navy Procurement funding was adjusted by headquarters Navy which made deltas to previous Presidents Budgets.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	8/6/2010	6/4/2015
Approved Quantity	4034	9947
Reference	Milestone B ADM	Milestone C 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 a delay in the completion of Operational Test and Evaluation caused by schedule revisions to the F-35 program, a threshold aircraft. Since the SDB II EMD contract award, the F-35 schedule has been further delayed, which requires an additional increase in the LRIP quantities to 9,947; this change was approved by the Milestone C ADM and accounts for max quantities in Lots 1-5 and most probable quantities in Lots 6-8. These quantities are necessary to provide production-configured or representative articles for Operational Test (OT), to establish an initial production base for the system, and to permit an orderly increase in the production rate for the system sufficient to lead to FRP upon the successful completion of OT.

Foreign Military Sales

Notes

The Defense Security Cooperation Agency (DSCA) has allocated \$71M from Special Defense Acquisition Funds (SDAF) to complete development and integration of exportability features into SDB II. Two allotments totaling \$52M were obligated in FY 2018. A final allotment of \$19M is required by first quarter FY 2020 to complete testing and exportability features. SDAF funding enables cost sharing over all projected sales to FMS customers.

Letter of Offer and Acceptance (LOA) Case: AT-D-YAH was signed by the Commonwealth of Australia (CoA) on February 23, 2018 and will provide SDB II test and training assets and support. The CoA assets will be procured in Lot 6.

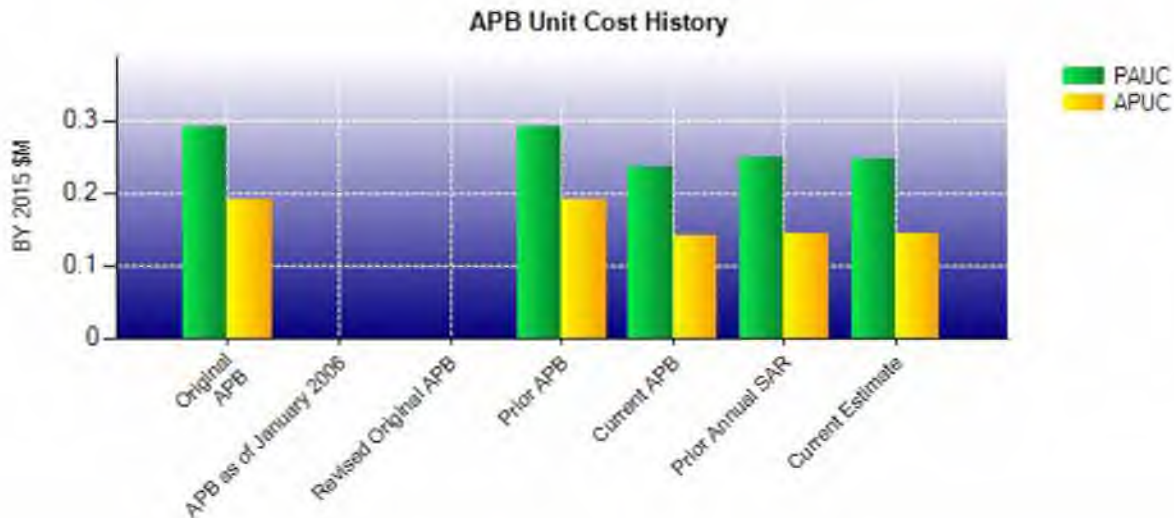
SDB II has provided Price and Availability data to Norway, Turkey, Finland, Belgium, Republic of Korea and Netherlands. Future Requests for Information are anticipated from other F-35 partners and customers.

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2015 \$M	BY 2015 \$M	% Change
	Current UCR Baseline (Sep 2015 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	4054.9	4243.0	
Quantity	17163	17163	
Unit Cost	0.236	0.247	+4.66
Average Procurement Unit Cost			
Cost	2376.8	2432.8	
Quantity	17000	17000	
Unit Cost	0.140	0.143	+2.14
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2015 \$M	BY 2015 \$M	% Change
	Original UCR Baseline (Oct 2010 APB)	Current Estimate (Dec 2018 SAR)	
Program Acquisition Unit Cost			
Cost	4979.8	4243.0	
Quantity	17163	17163	
Unit Cost	0.290	0.247	-14.83
Average Procurement Unit Cost			
Cost	3237.9	2432.8	
Quantity	17000	17000	
Unit Cost	0.190	0.143	-24.74



APB Unit Cost History					
Item	Date	BY 2015 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 2010	0.290	0.190	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	Oct 2010	0.290	0.190	0.304	0.209
Current APB	Sep 2015	0.236	0.140	0.259	0.164
Prior Annual SAR	Dec 2017	0.248	0.143	0.269	0.166
Current Estimate	Dec 2018	0.247	0.143	0.271	0.168

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)										
Initial PAUC Development Estimate	Changes									PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.304	0.006	0.000	0.001	0.000	-0.049	0.000	-0.003	-0.045		0.259

Current SAR Baseline to Current Estimate (TY \$M)										
PAUC Production Estimate	Changes									PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.259	0.000	0.000	0.000	0.007	0.002	0.000	0.003	0.012		0.271

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.209	0.005	0.000	0.001	0.000	-0.048	0.000	-0.003	-0.045	0.164

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.164	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.168

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	Aug 2010	Jul 2010
Milestone C	N/A	Jan 2013	May 2015	May 2015
IOC	N/A	Jul 2016	Jan 2018	Aug 2019
Total Cost (TY \$M)	N/A	5210.4	4440.9	4651.9
Total Quantity	N/A	17163	17163	17163
PAUC	N/A	0.304	0.259	0.271

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 (Production Estimate)	1648.9	2792.0	--	4440.9
Previous Changes				
Economic	-1.3	-23.1	--	-24.4
Quantity	--	--	--	--
Schedule	--	-1.4	--	-1.4
Engineering	+115.8	--	--	+115.8
Estimating	+41.1	+24.9	--	+66.0
Other	--	--	--	--
Support	--	+28.4	--	+28.4
Subtotal	+155.6	+28.8	--	+184.4
Current Changes				
Economic	+4.6	+26.5	--	+31.1
Quantity	--	--	--	--
Schedule	--	+1.0	--	+1.0
Engineering	+5.0	--	--	+5.0
Estimating	-12.5	-23.2	--	-35.7
Other	--	--	--	--
Support	--	+25.2	--	+25.2
Subtotal	-2.9	+29.5	--	+26.6
Total Changes	+152.7	+58.3	--	+211.0
CE - Cost Variance	1801.6	2850.3	--	4651.9
CE - Cost & Funding	1801.6	2850.3	--	4651.9

Summary BY 2015 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1678.1	2376.8	--	4054.9
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+7.1	--	+7.1
Engineering	+107.9	--	--	+107.9
Estimating	+32.8	+22.2	--	+55.0
Other	--	--	--	--
Support	--	+24.1	--	+24.1
Subtotal	+140.7	+53.4	--	+194.1
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	+4.6	--	--	+4.6
Estimating	-13.2	-20.8	--	-34.0
Other	--	--	--	--
Support	--	+23.4	--	+23.4
Subtotal	-8.6	+2.6	--	-6.0
Total Changes	+132.1	+56.0	--	+188.1
CE - Cost Variance	1810.2	2432.8	--	4243.0
CE - Cost & Funding	1810.2	2432.8	--	4243.0

Previous Estimate: December 2017

RDT&E	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+4.6
Baseline extension (Estimating)	+23.6	+28.4
Revised estimate to align to schedule changes in the F-35 program. (Navy) (Estimating)	-31.9	-35.6
Additional funding for Precise Navigation. (Air Force) (Engineering)	+4.6	+5.0
Adjustment for current and prior escalation. (Estimating)	-2.2	-2.4
Revised estimate for Small Business Innovative Research in FY 2018. (Air Force) (Estimating)	-1.3	-1.4
Revised estimate due to application of new outyear inflation indices. (Air Force) (Estimating)	-0.8	-0.8
Revised estimate due to application of new outyear inflation indices. (Navy) (Estimating)	-0.6	-0.7
RDT&E Subtotal	-8.6	-2.9

Procurement	\$M	
	Base Year	Then Year
Current Change Explanations		
Revised escalation indices. (Economic)	N/A	+26.5
Stretch-out of procurement buy profile from FY 2018 to FY 2025 which resulted from a funding reduction in FY 2024 requiring the move of 653 weapons from Lot 10 to Lot 11. (Schedule)	0.0	+1.0
Revised estimate for the net effect of obsolescence impacts in FY 2019 - FY 2021. (Air Force) (Estimating)	-20.1	-23.2
Refined estimate due to Navy-wide funding adjustments. (Navy) (Estimating)	+2.0	+2.5
Adjustment for current and prior escalation. (Estimating)	-2.7	-2.5
Adjustment for current and prior escalation. (Support)	-0.6	-1.1
Increase in Other Support due to realignment of SDB I funds to cover obsolescence. (Air Force) (Support)	+24.5	+26.8
Decrease in Other Support due Navy-wide funding adjustments. (Navy) (Support)	-0.5	-0.5
Procurement Subtotal	+2.6	+29.5

Contracts

Contract Identification	
Appropriation:	Procurement
Contract Name:	Low Rate Initial Production Lot 2
Contractor:	Raytheon Company
Contractor Location:	1151 E. Hermans Rd Tucson, AZ 85756
Contract Number:	FA8672-16-C-0001/2
Contract Type:	Fixed Price Incentive(Firm Target) (FPIF)
Award Date:	September 08, 2016
Definitization Date:	September 08, 2016

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
49.2	55.8	250	49.3	55.9	250	49.3	55.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the cost increase of 37 additional containers purchased at pre-negotiated pricing.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/25/2019)	-28.1	-2.5
Previous Cumulative Variances	-18.2	+7.3
Net Change	-9.9	-9.8

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to cost and schedule overruns. Government liability \$55.9M based upon FPIF contract.

The unfavorable net change in the schedule variance is due to cost and schedule overruns. Government liability \$55.9M based upon FPIF contract.

Notes

SDB II LRIP Lot 2 contract was awarded for 250 Munitions, 345 Single Weapon Containers, 20 Production Reliability Incentive Demonstration Effort (PRIDE) Captive Vehicles, 20 PRIDE Test Vehicles, 32 Weapon Load Crew Trainers, six Practical Explosive Ordnance Disposal System Trainers, and data. All 250 munitions have been delivered as of September 28, 2018.

The SDB II LRIP Lot 2 Integrated Baseline Review was completed June 21, 2017.

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

Contract Identification

Appropriation: Procurement
Contract Name: Low Rate Initial Production Lot 3
Contractor: Raytheon Missile Systems
Contractor Location: 1151 E. Hermans Rd
 Tucson, AZ 85756
Contract Number: FA8672-17-C-0010/3
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: January 27, 2017
Definitization Date: January 27, 2017

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
62.4	70.8	312	62.4	70.8	312	58.5	58.5

Contract Variance			
Item	Cost Variance		Schedule Variance
Cumulative Variances To Date (2/25/2019)	-21.2		+11.1
Previous Cumulative Variances	-4.3		+13.0
Net Change	-16.9		-1.9

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to overruns from suppliers. Government liability maximum is \$70.8M with FPIF contract.

The unfavorable net change in the schedule variance is due to the contractor took credit for supplier parts purchased as a bundle ahead of the original plan.

Notes

The SDB II LRIP Lot 3 contract option was exercised for 312 Munitions, 413 Single Weapon Containers, 20 Tactical Weapon conversions to Guided Test Vehicles, 20 Production Reliability Incentive Demonstration Effort captive vehicles, and 24 Weapon Load Crew Trainers/Conventional Munitions Maintenance Trainers.

The SDB II LRIP Lot 3 Integrated Baseline Review was February 2018.

Contract Identification

Appropriation: Procurement
Contract Name: Low Rate Initial Production Lot 4
Contractor: Raytheon Missile Systems
Contractor Location: 1151 E. Herma's Rd
 Tucson, AZ
Contract Number: FA8762-18-C-0010
Contract Type: Firm Fixed Price (FFP)
Award Date: February 28, 2018
Definitization Date: February 28, 2018

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
77.3	N/A	570	87.7	N/A	660	87.7	87.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to addition of 90 DoN weapons and 10 dual weapon containers added to the contract.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This is the first time this contract is being reported.

The SDB II LRIP Lot 4 option was exercised for 570 Munitions, 398 Single Weapon Containers, 126 Dual Weapon Containers, 20 Production Reliability Incentive Demonstration Effort captive vehicles, 20 PRIDE test vehicles, and 45 Weapon Load Crew Trainers. Within 60 days, the Government exercised its unilateral right to add additional quantities to the contract adding 90 additional munitions and 10 Dual Weapon Containers (570 Air Force, 90 Navy).

Contract Identification

Appropriation: Procurement
Contract Name: Low Rate Initial Production Lot 5
Contractor: Raytheon Missile Systems
Contractor Location: 1152 E. Hermans Rd
 Tucson, AZ 85756
Contract Number: FA8672-17-C-0010
Contract Type: Firm Fixed Price (FFP)
Award Date: December 17, 2018
Definitization Date: December 17, 2018

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
141.4	N/A	1260	141.4	N/A	1260	141.4	141.4

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This is the first time this contract is being reported.

The SDB II LRIP Lot 5 option was exercised for 1260 Munitions, 389 Single Weapon Containers, 344 Dual Weapon Containers, 20 Production Reliability Incentive Demonstration Effort (PRIDE) captive vehicles, 20 PRIDE test vehicles, and 36 Weapon Load Crew Trainers.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	163	163	163	100.00%
Production	459	598	17000	3.52%
Total Program Quantity Delivered	622	761	17163	4.43%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	4651.9	Years Appropriated	15
Expended to Date	1530.1	Percent Years Appropriated	71.43%
Percent Expended	32.89%	Appropriated to Date	2063.2
Total Funding Years	21	Percent Appropriated	44.35%

The above data is current as of March 11, 2019.

Notes

The Government does not take delivery of the 163 Developmental Test (DT) assets. The DT assets 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:	June 17, 2016
Source of Estimate:	POE
Quantity to Sustain:	17000
Unit of Measure:	Total Quantity
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2014 - FY 2046

The 163 developmental units will not be sustained.

Sustainment Strategy

The SDB II O&S strategy is to use Contractor Logistics Support (CLS) to cover sustainment activities for 17,000 weapons. Until SDB II achieves Full Rate Production, the program office plans to award an Interim CLS contract for FY 2019 through FY 2021 to support test assets and non-warranty repair of operational assets. The Request for Proposal is currently under program office review. A follow-on CLS Product Support Agreement (PSA) will be developed and put on contract with Raytheon. That PSA will be reviewed and updated at the end of each contractual period of performance. A 20-year warranty is assumed with a 20-year shelf-life and the subsequent demilitarization of the weapon.

Antecedent Information

No Antecedent. The 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 BY2015 \$M		
Cost Element	SDB II Average Annual Cost Per Total Quantity	No Antecedent (Antecedent) N/A
Unit-Level Manpower	0.632	--
Unit Operations	0.000	--
Maintenance	2.910	--
Sustaining Support	15.843	--
Continuing System Improvements	5.029	--
Indirect Support	0.466	--
Other	0.000	--
Total	24.880	--

Item	Total O&S Cost \$M			
	SDB II		Current Estimate	No Antecedent (Antecedent)
	Current Production APB Objective/Threshold			
Base Year	897.5	987.3	821.0	N/A
Then Year	1327.5	N/A	1212.5	0.0

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 total number of years in the O&S phase, \$24.88M * 33 years = \$821M (BY 2015).

O&S Cost Variance		
Category	BY 2015 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2017 SAR	821.0	
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	821.0	

Disposal Estimate Details

Date of Estimate: April 29, 2015
Source of Estimate: SCP
Disposal/Demilitarization Total Cost (BY 2015 \$M): 41.7