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**Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	221.749	55.818	97.622	112.846	-	112.846	110.575	80.472	66.121	49.456	Continuing	Continuing
1663: <i>SDB II F-18 Integration</i>	33.626	19.390	52.616	50.546	-	50.546	34.250	6.002	6.156	3.288	Continuing	Continuing
3072: <i>Small Diameter Bomb (SDB)</i>	153.994	28.403	37.605	57.637	-	57.637	72.866	71.020	56.442	42.572	Continuing	Continuing
3082: <i>JMM BRU</i>	34.129	8.025	7.401	4.663	-	4.663	3.459	3.450	3.523	3.596	Continuing	Continuing

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 439

**A. Mission Description and Budget Item Justification**

Small Diameter Bomb Increment II (SDB II) is an ACAT 1D joint Department of the Air Force (USAF) and Department of the Navy (DON), with the USAF as the lead service. SDB II provides the warfighter with the capability to attack mobile targets in all-weather from Stand-Off range. SDB II addresses the following warfighter requirements: attack mobile targets, adverse weather operations, multiple kills per pass, multiple ordnance carriage, precision munitions capability, capability against fixed targets, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures, and provides a net-centric operations capability. The threshold aircraft for the USAF is the F-15E and for the DON are the F-35B and F-35C. SDB II will be compatible with the Joint Miniature Munitions Bomb Rack Unit (JMM BRU) (BRU-61A/A).

The DON has adjusted the platform integration strategy through the inclusion of F/A-18 E/F to deliver the capability to the warfighter aligned to adjusted F-35 program's schedule.

**BUDGET ACTIVITY JUSTIFICATION:** This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification: FY 2018 Navy</b>	<b>Date: May 2017</b>
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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
Previous President's Budget	57.144	97.622	113.006	-	113.006
Current President's Budget	55.818	97.622	112.846	-	112.846
Total Adjustments	-1.326	0.000	-0.160	-	-0.160
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.326	0.000			
• Program Adjustments	0.000	0.000	-0.373	-	-0.373
• Rate/Misc Adjustments	0.000	0.000	0.213	-	0.213

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**Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1663: <i>SDB II F-18 Integration</i>	33.626	19.390	52.616	50.546	-	50.546	34.250	6.002	6.156	3.288	Continuing	Continuing
Quantity of RDT&E Articles	29	-	68	72	-	72	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The DON has adjusted the platform integration strategy by inclusion of Small Diameter Bomb II (SDB II) and the Joint Miniature Munitions Bomb Rack Unit (JMM BRU) on F/A-18 E/F to deliver the capability to the warfighter in light of continued F-35 program delays. This program funds the aircraft software and weapon testing required to successfully integrate SDB II/JMM BRU on the F/A-18 E/F to meet a FY 2020 Initial Operational Capability (IOC).

The SDB II integration program began in FY 2014 with funding residing in PE 0204136N, PU 1662 F/A-18 Improvement.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<b>Title:</b> F/A-18 Integration	19.390	52.616	50.546	0.000	50.546
<b>Articles:</b>	-	68	72	-	72
<b>FY 2016 Accomplishments:</b>					
Continued Operational Flight Plan (OFP) software coding, to include Universal Armament Interface (UAI). Conducted High Speed Performance wind tunnel at NASA Ames.					
<b>FY 2017 Plans:</b>					
Continue OFP software coding to include UAI. Complete Cantilever Ground Vibration Test (GVT). Begin Developmental Test (DT) efforts to include Loads, Flying Qualities, Noise and Vibe, Captive Carry, and Weapon Separation testing. Contract with SDB Prime contractor for 10 SDB Jettison Test Vehicles (JTV)s, 24 JTV+s, 2 SDB Electromagnetic Environment Effects (E3)/Hazard of Electromagnetic Radiation to Ordnance (HERO) test assets, and 18 SDB II Weapon System Simulators (WSS) for flight testing. Contract with JMM BRU Prime contractor for 5 Telemetry (TM) BRUs, 4 Tactical BRUs, and 5 BRU System Simulators for flight testing.					
<b>FY 2018 Base Plans:</b>					
Complete ground testing, continue Development Test (DT) efforts, and complete OFP software coding, including UAI. Contract with SDB Prime contractor for 10 SDB JTVs, 20 SDB JTV+s, 15 SDB Separation Test Vehicles (STVs), 10 SDB Guided Test Vehicles (GTVs), and 2 SDB Captive Carriage Reliability Test (CCRTs) for flight testing. Contract with JMM BRU Prime contractor for 15 BRU JTVs for flight testing.					
<b>FY 2018 OCO Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy		<b>Date:</b> May 2017
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	19.390	52.616	50.546	0.000	50.546

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Integration of SDB II and the JMM BRU is software driven by ground and flight test requirements.

**E. Performance Metrics**

Earned value will be used for the contracted efforts.

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**Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>
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<b>Support (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OFP Development and Support	SS/IDIQ	Boeing : St. Louis, MO	12.334	7.000	Jan 2016	15.012	Jan 2017	13.569	Jan 2018	-		13.569	19.309	67.224	67.224
SDB II Prime Contractor Support	SS/IDIQ	Raytheon Missile Systems : Tuscon, AZ	5.000	1.607	May 2016	13.232	May 2017	14.756	May 2018	-		14.756	14.439	49.034	49.034
JMM BRU Prime Contractor Support	SS/IDIQ	Raytheon Intelligence Information Systems, Inc. : Indianapolis, IN	5.554	1.111	May 2016	6.822	May 2017	3.648	May 2018	-		3.648	13.033	30.168	30.168
SDB II/JMM BRU Integration Support	WR	NAWC AD : Patuxent River, MD	2.000	2.200	Nov 2015	2.788	Nov 2016	2.855	Nov 2017	-		2.855	Continuing	Continuing	Continuing
SDB II/JMM BRU Software Support	WR	NAWC WD : China Lake, CA	2.538	2.186	Nov 2015	2.773	Nov 2016	2.844	Nov 2017	-		2.844	Continuing	Continuing	Continuing
<b>Subtotal</b>			27.426	14.104		40.627		37.672		-		37.672	-	-	-

**Remarks**  
 Funding for Boeing includes software coding of Operational Flight Program Build, to include Universal Armament Interface (UAI) and F/A-18 E/F aircraft support required to meet the FY 2020 Initial Operating Capability (IOC).  
  
 Funding for SDB II (Raytheon Missile Systems) and JMM BRU (Raytheon Intelligence Information Systems) Prime Contractors includes support of Super Hornet Integration efforts. Increase from FY 2016 to FY 2017 is to procure test articles in support of Development Test (DT) and Operational Test (OT).  
  
 Funding for NAWC AD supports engineering support for F/A-18 E/F Super Hornet. Funding for NAWC WD supports engineering support for SDB II and the Advanced Weapons Lab (AWL) at China Lake.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Wind Tunnel Test	MIPR	AEDC : Arnold AFB, TN	6.200	0.000		0.000		0.000		-		0.000	0.000	6.200	-
Wind Tunnel Test	MIPR	NASA Ames : Moffett Field, CA	0.000	0.878	Mar 2016	0.000		0.000		-		0.000	0.000	0.878	-

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**Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Test	WR	VX-23 : Patuxent River, MD	0.000	4.408	Jan 2016	11.989	Jan 2017	12.874	Jan 2018	-		12.874	4.889	34.160	-
Operational Test	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.000		-		0.000	13.635	13.635	-
<b>Subtotal</b>			6.200	5.286		11.989		12.874		-		12.874	18.524	54.873	-

**Remarks**  
 Wind Tunnel Testing for Arnold Engineering Development Center (AEDC) is for the Separation and Loads Wind Tunnel Testing which occurred 4th Qtr FY 2015. Wind Tunnel Testing for NASA Ames is for the High Speed Performance Wind Tunnel Testing which occurred 2nd Qtr FY 2016.

Developmental Test (DT) includes activities such as Loads, Flying Qualities, Noise and Vibe, Captive Carry and Weapon Separation. DT funding in FY 2017 is for test aircraft modifications and flight preparations.

Operational Test funding includes flight tests and support to validate integration of SDB II and F/A-18 E/F.

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	33.626	19.390	52.616	50.546	-	50.546	-	-	-

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>
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F/A-18 E/F SDB II Integration	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022										
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q							
<b>Acquisition Milestones</b>																																			
<b>Systems Development</b>	OFP Development and Integration																																		
<b>Test &amp; Evaluation</b>	Test Article Deliveries																																		
	Wind Tunnels											Developmental Test																							
															Operational Test																				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: FY 2018 Navy</b>		<b>Date: May 2017</b>
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 1663 / <i>SDB II F-18 Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>F/A-18 E/F SDB II Integration</i></b>				
Acquisition Milestones: IOC	4	2020	4	2020
Systems Development: OFP Development and Integration	1	2016	3	2018
Test & Evaluation: Test Article Deliveries	1	2016	3	2019
Test & Evaluation: Wind Tunnels	1	2016	3	2016
Test & Evaluation: Developmental Test	3	2018	3	2019
Test & Evaluation: Operational Test	3	2019	3	2020



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<b>Exhibit R-2A, RDT&amp;E Project Justification: FY 2018 Navy</b>										<b>Date: May 2017</b>		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>				<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3072: <i>Small Diameter Bomb (SDB)</i>	153.994	28.403	37.605	57.637	-	57.637	72.866	71.020	56.442	42.572	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code: 439</b>												

**A. Mission Description and Budget Item Justification**

SDB II is an ACAT ID program providing the warfighter a capability to attack mobile targets in all weather from Stand-Off range. The Air Force is the lead service. Raytheon in Tucson, AZ is the prime contractor. SDB II addresses the following warfighter requirements: attack mobile targets, multiple kills per pass, multiple ordnance carriage, all weather operations, near-precision munitions capability, capability against fixed targets, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures, and a migration path to net centric ops capability.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
<b>Title:</b> SDB II Weapon Support	11.197	13.863	25.948	0.000	25.948
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> Funding provides for SDB II Engineering Manufacturing and Development (EMD) efforts including weapon vendor support, test assets, and government support.					
<b>FY 2016 Accomplishments:</b> Continue support of EMD and integration of SDB II with F-35B and F-35C. Continue detailed F-35B and F-35C efforts to include specific weapon software changes to accommodate F-35 Block 4 Operational Flight Program (OFP).					
<b>FY 2017 Plans:</b> Continue support of EMD and integration of SDB II with F-35B and F-35C. Continue detailed F-35B and F-35C efforts to include specific weapon software changes to accommodate F-35 Block 4 OFP and bay modifications.					
<b>FY 2018 Base Plans:</b> Continue support of EMD and integration of SDB II with F-35B and F-35C. Build up and delivery of test assets to support initial flight testing. Begin participation in Flight Sciences and Flight Test support and analysis for Development Test (DT). Testing includes, ejection tests, environmental & loads analysis and release envelope clearance.					
<b>FY 2018 OCO Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy		<b>Date:</b> May 2017
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
N/A					
<p><b>Title:</b> JSF Integration</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Funding provided for integration of SDB II on F-35B and F-35C, specifically for Lockheed Martin to develop F-35 Operational Flight Program (OFP) software, flight missions, and support and analysis of missions.</p> <p><b>FY 2016 Accomplishments:</b> Continue F-35 UAI OFP development and coding. Begin F-35 bay modifications required for SDB II/JSF/JMM BRU integration and modification of test aircraft to support SDB II. Manning of JSF prime contractor team to support SDB II and JMM BRU development and integration.</p> <p><b>FY 2017 Plans:</b> Continue F-35 UAI OFP development and coding. Continue F-35 bay modifications required for SDB II/JSF/JMM BRU integration and modification of test aircraft to support SDB II, to include modification of test aircraft and engineering change proposal for future production aircraft. Full manning of JSF prime contractor team to support SDB II weapon development and integration. Begin contract with Lockheed Martin for Block 4 OFP software development.</p> <p><b>FY 2018 Base Plans:</b> Increase in the UAI contract to complete the final software testing of UAI into the JSF Operational Flight Program and integration of SIL final validation of software functionality. Increase in Block 4 software to merge UAI software into baseline Block 4 software and modify as necessary. Begin participation in Block 4 Flight Sciences which conducts aircraft environment test, Ground Vibration, and Jettison testing to prove the weapon can safely separate from the aircraft without damaging the aircraft and establishes weapon carriage and release envelopes. Implement Bay Modifications to Development Test (DT) aircraft in support of flight sciences and test. Begin DT.</p> <p><b>FY 2018 OCO Plans:</b> N/A</p>	17.206	23.742	31.689	0.000	31.689
	-	-	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	28.403	37.605	57.637	0.000	57.637

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy	<b>Date:</b> May 2017
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<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE,AF/0604329F: <i>Small Diameter Bomb</i>	29.083	54.838	57.369	-	57.369	78.070	31.462	17.441	27.556	0.000	1,324.132
• MPAF/0207327F: <i>Small Diameter Bomb</i>	135.117	92.361	82.705	-	82.705	72.506	143.935	336.512	310.233	883.967	2,092.461
• WPN/BLI2238: <i>Enter Other Funding Description.</i>	0.000	0.000	20.968	-	20.968	92.148	121.619	117.743	120.101	301.856	774.435

**Remarks**

SDB II Lots 1-3 are USAF only procurements. The DON procurements begin with Lot 4 in FY 2018.

**D. Acquisition Strategy**

The SDB II acquisition strategy was to conduct a full and open competition to select up to two contractors to compete during a planned 42-month risk reduction phase prior to entering EMD. This competition began April 17, 2006 with the signature of contracts to the competing contractors: 1) Raytheon and 2) the team of Boeing and Lockheed Martin. A Fixed Price Incentive Firm Target type contract for EMD, including Firm Fixed Price procurement options for Lots 1-3 was awarded to Raytheon August 9, 2010. Lots 4 & 5 are included in the contract, but are Not-To-Exceed options. Milestone C was approved 4 June 2015, with Lot 1 (Air Force only) awarded 12 June 2015.

The Navy funding will support Navy-unique efforts for SDB Increment II, such as aircraft integration, ship suitability, studies and analysis, and program management and government in-house support. These efforts will be performed on several cost-type contracts or through cost reimbursable work requests to government activities and contractors.

**E. Performance Metrics**

Earned value management has been implemented on the EMD contract with Raytheon.

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**Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development - SDB II EMD	C/FPIF	Raytheon : Tucson, AZ	31.364	4.121	Mar 2016	7.725	Mar 2017	20.408	Mar 2018	-		20.408	88.648	152.266	152.266
Aircraft Integration - JSF	C/CPFF	Lockheed Martin : Fort Worth, TX	19.859	11.217	Jan 2016	7.005	Jan 2017	4.104	Mar 2018	-		4.104	3.231	45.416	45.416
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	15.497	0.000		0.000		0.000		-		0.000	0.000	15.497	-
<b>Subtotal</b>			66.720	15.338		14.730		24.512		-		24.512	91.879	213.179	-

**Remarks**  
 Primary Hardware Development to Raytheon in Tucson, AZ reflects the SDB II prime contractor and includes test assets. Primary Hardware Development reflects additional prime contractor costs to support F-35 and JMM BRU integration.  
  
 Funding for Lockheed Martin F-35 includes Associate Contractor Agreements (ACA), bay modifications, logistics efforts, and adapter hardware. It does not include OFF, UAI software coding, nor test missions which are represented in Support and Test sections, respectively. Bay modifications with Lockheed Martin will begin in FY 2016 to move hydraulic lines and latches to accommodate the SDB II weapon and JMM BRU rack.

<b>Support (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development - JSF	C/CPFF	Lockheed Martin : Ft. Worth, TX	8.534	7.000	Jan 2016	17.316	Jan 2017	24.169	Jan 2018	-		24.169	37.110	94.129	94.129
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	17.410	0.000		0.000		0.000		-		0.000	0.000	17.410	-
<b>Subtotal</b>			25.944	7.000		17.316		24.169		-		24.169	37.110	111.539	-

**Remarks**  
 Studies and Analyses include Navy activities to define Concept of Operations (CONOPS) and better define Navy-specific and interoperability requirements, such as weapon data link advanced concept technology demonstration, seeker trade studies, and data link trade studies. Prior year Software Development efforts are in support of JSuW Joint Capability Technology Demonstrations incorporation of J.11 Message Set into Strike Weapons and Weapon Data Link Network efforts.

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**Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>
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<b>Support (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Software Development for F-35 is the UAI, OFP, and mission planning which supports the SDB II program. Incrementally funded contract was awarded in FY 2014 to initialize, target, and release the weapon. It will cover 95% of the UAI messages and will support all other UAI compliant weapons in JSF Block 4 and prior, e.g., SDB I, JDAM, and LJDAM.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation - JSuW/WDLN	Various	Various : Various	2.864	0.000		0.000		0.000		-		0.000	36.715	39.579	-
Operational Test & Evaluation - SDBII	WR	COMOPTEVFOR : China Lake, CA	1.010	0.000		0.000		0.000		-		0.000	23.959	24.969	-
Developmental Test & Evaluation - SDB II	C/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		0.000		3.416	Mar 2018	-		3.416	23.877	27.293	27.293
Prior Year T&E cost no longer funded in the FYDP	Various	Various : Various	8.049	0.000		0.000		0.000		-		0.000	0.000	8.049	-
<b>Subtotal</b>			11.923	0.000		0.000		3.416		-		3.416	84.551	99.890	-

**Remarks**  
 Developmental Test (DT) and Operational Test (OT) include all aspects of the weapon system - SDB II, JMM BRU, and F-35B and F-35C aircraft OFP. There will be no separate DT or OT period for JMM BRU.  
  
 Developmental Test squadrons and locations for F-35B and F-35C are still uncertain as squadrons are being established.  
  
 Operational test is scheduled to begin in FY 2021 to support FY 2022 IOC.

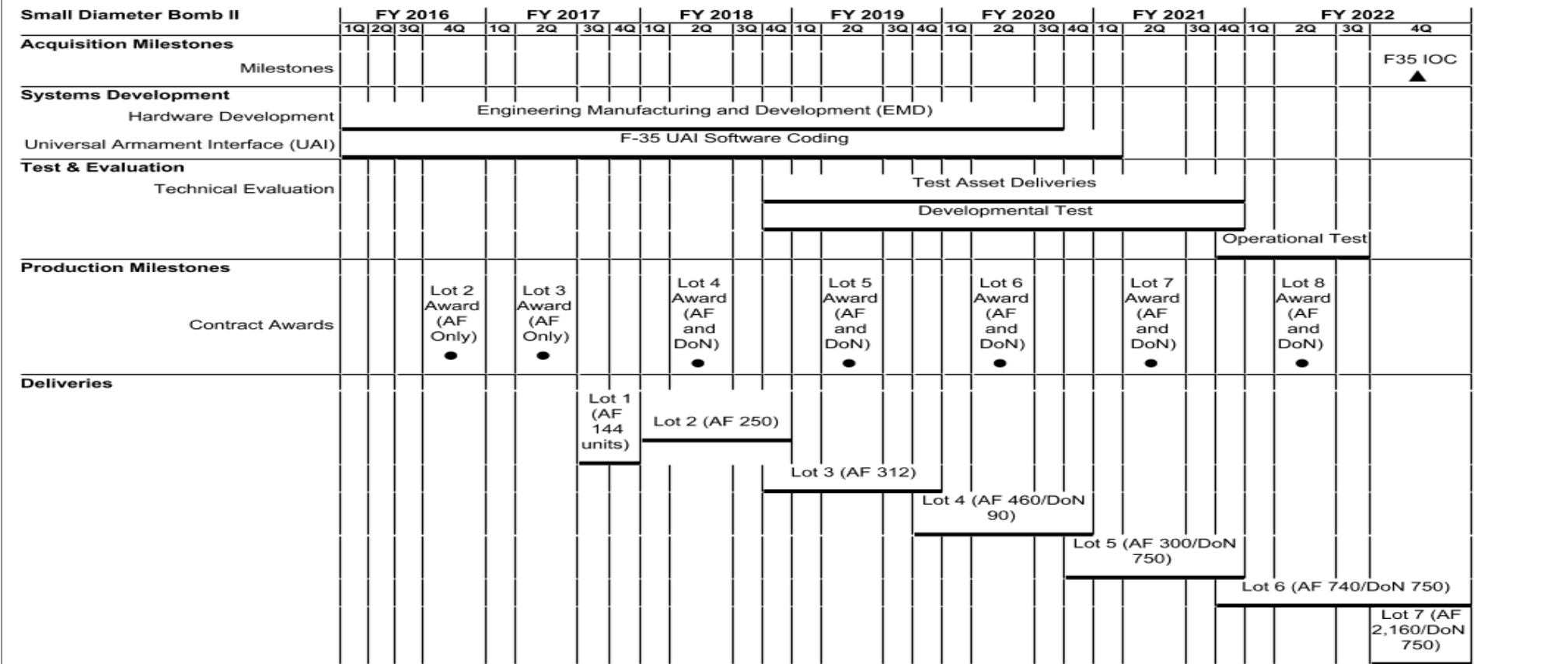
<b>Management Services (\$ in Millions)</b>				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Services	Various	Various : Various	2.700	0.520	Nov 2015	0.530	Nov 2016	0.556	Nov 2017	-		0.556	1.732	6.038	-
Government Support	WR	NAWC WD : China Lake, CA	26.380	2.882	Nov 2015	2.598	Nov 2016	2.702	Nov 2017	-		2.702	Continuing	Continuing	Continuing



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**Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>
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2018PB - 0604329N - 3072

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: FY 2018 Navy</b>		<b>Date: May 2017</b>
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3072 / <i>Small Diameter Bomb (SDB)</i>

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b><i>Small Diameter Bomb II</i></b>				
Acquisition Milestones: Milestones: F-35 IOC	4	2022	4	2022
Systems Development: Hardware Development: Engineering Manufacturing and Development (EMD)	1	2016	3	2020
Systems Development: Universal Armament Interface (UAI): F-35 OFP Software Coding	1	2016	1	2021
Test & Evaluation: Technical Evaluation: Test Asset Deliveries	4	2018	4	2021
Test & Evaluation: Technical Evaluation: Developmental Test	4	2018	4	2021
Test & Evaluation: Technical Evaluation: Operational Test	4	2021	3	2022
Production Milestones: Contract Awards: Lot 2 Award (AF Only)	4	2016	4	2016
Production Milestones: Contract Awards: Lot 3 Award (AF Only)	2	2017	2	2017
Production Milestones: Contract Awards: Lot 4 Award (AF and DoN)	2	2018	2	2018
Production Milestones: Contract Awards: Lot 5 Award (AF and DoN)	2	2019	2	2019
Production Milestones: Contract Awards: Lot 6 Award (AF and DoN)	2	2020	2	2020
Production Milestones: Contract Awards: Lot 7 Award (AF and DoN)	2	2021	2	2021
Production Milestones: Contract Awards: Lot 8 Award (AF and DoN)	2	2022	2	2022
Deliveries: Lot 1 Delivery (AF only 144 units)	3	2017	4	2017
Deliveries: Lot 2 Del (AF only 250 units)	1	2018	4	2018
Deliveries: Lot 3 Del (AF only 312 units)	4	2018	4	2019
Deliveries: Lot 4 Del (AF 460; DoN 90 units)	4	2019	4	2020
Deliveries: Lot 5 Del (AF 300; DoN 750 units)	4	2020	4	2021
Deliveries: Lot 6 Del (AF 740; DoN 750 units)	4	2021	4	2022
Deliveries: Lot 7 Del (AF 2,160; DoN 750 units)	4	2022	4	2022



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**Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3082 / <i>JMM BRU</i>
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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3082: <i>JMM BRU</i>	34.129	8.025	7.401	4.663	-	4.663	3.459	3.450	3.523	3.596	Continuing	Continuing
Quantity of RDT&E Articles		6	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) is an Air Force (AF) led ACAT III program. It is required for the Department of the Navy's (DON) carriage of the SDB II weapon in the internal bay of the F-35B and F-35C and operation in the DON environment. The SDB II Capability Development Document (CDD) states that SDB II must be operable on the Miniature Munitions Smart Rack BRU-61/A. The BRU-61/A, currently in sustainment for the AF, does not meet the needs to operate with SDB II within the F-35 internal bay in the DON environment. The JMM BRU, designated BRU-61A/A, fills the capability gap required by the DON. Efforts include development of a dual power capability to meet the SDB II operating environment on the F-35.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<b>Title:</b> Joint Miniature Munitions Bomb Rack Unit (JMM BRU) Government Support	3.996	4.605	2.214	0.000	2.214
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> Funding provided for the SDB II Carriage System support and integration into Navy environments.					
<b>FY 2016 Accomplishments:</b> Continue Engineering and Manufacturing Development (EMD) phase with prime contractor. Continue DON logistics efforts to include design and development of Peculiar Support Equipment (PSE) for JMM BRU. Continue development of Common Aviation Armament Test Set (CAATS) software required for JMM BRU.					
<b>FY 2017 Plans:</b> Continue Engineering Management Development (EMD) phase with prime contractor. EMD Flight Test Phase with prime contractor will be awarded.					
<b>FY 2018 Base Plans:</b> Complete Engineering Management Development (EMD) phase with prime contractor and continue EMD Flight Test Phase with prime contractor.					
<b>FY 2018 OCO Plans:</b> N/A					
<b>Title:</b> Joint Miniature Munitions Bomb Rack (JMM BRU) Prime Contractor	4.029	2.796	2.449	0.000	2.449
<b>Articles:</b>	6	-	-	-	-

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**Exhibit R-2A, RDT&E Project Justification:** FY 2018 Navy **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	<b>Project (Number/Name)</b> 3082 / <i>JMM BRU</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p><b>Description:</b> Prime Contractor Support of JMM BRU (BRU-61A/A) TD/EMD contract.</p> <p><b>FY 2016 Accomplishments:</b> Continue execution of EMD contract. Purchase 2 Instrumented Measurement Vehicles and 4 Telemetry JMM BRUs. JMM BRU prime contractor fully manned to continue EMD phase.</p> <p><b>FY 2017 Plans:</b> Continue Engineering Management Development (EMD) phase; deliver 2 Instrumented Measurement Vehicles and 4 Telemetry JMM BRUs. Award EMD Flight Test phase.</p> <p><b>FY 2018 Base Plans:</b> Complete Engineering Management Development (EMD) phase and continue EMD Flight Test phase.</p> <p><b>FY 2018 OCO Plans:</b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	8.025	7.401	4.663	0.000	4.663

<b>C. Other Program Funding Summary (\$ in Millions)</b>										
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete / Total Cost
• APN/072000: <i>War Consumables</i>	0.000	0.000	10.345	-	10.345	16.987	17.270	17.617	17.968	Continuing / Continuing

**Remarks**  
Procurement for JMM BRU (BRU-61 A/A) is included in APN BLI 072000 War Consumables. Values above reflect the totals for the BRU-61 A/A cost codes, not the total BLI. First year of procurement is FY 2018 to support the FY 2020 IOC. The first two lots are LRIP lots, which are options on the current development contract with Raytheon Intelligence Information Systems (RIIS). Lot 1 will be 40 units; Lot 2 will be 90 units.

**D. Acquisition Strategy**  
The JMM BRU is an Air Force led ACAT III program. Industry day was held 4QFY 2010, acquisition strategy approved 1QFY 2011 and Material Development Decision (MDD) 2Q FY 2011. Competitive source selection conducted with Technology Development contract award 3QFY 2013. Milestone B was completed and Engineering, Manufacturing, and Development (EMD) contract awarded 4QFY 2015.

**E. Performance Metrics**  
Earned value management is being implemented on the TD/EMD contract.