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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	167.799	53.950	57.144	97.622	-	97.622	113.006	110.340	80.165	65.799	Continuing	Continuing
1663: <i>SDB II F-18 Integration</i>	0.000	33.626	19.642	52.616	-	52.616	50.446	34.114	5.797	5.940	Continuing	Continuing
3072: <i>Small Diameter Bomb (SDB)</i>	142.835	11.159	29.329	37.605	-	37.605	57.913	72.769	70.921	56.340	21.856	500.727
3082: <i>JMM BRU</i>	24.964	9.165	8.173	7.401	-	7.401	4.647	3.457	3.447	3.519	Continuing	Continuing

Program MDAP/MAIS Code: 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 USN 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. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	56.286	97.002	104.032	-	104.032
Current President's Budget	53.950	57.144	97.622	-	97.622
Total Adjustments	-2.336	-39.858	-6.410	-	-6.410
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-39.858			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.182	0.000			
• SBIR/STTR Transfer	-1.154	0.000			
• Program Adjustments	0.000	0.000	-0.635	-	-0.635
• Rate/Misc Adjustments	0.000	0.000	-5.775	-	-5.775

Change Summary Explanation

Decrease in Small Diameter Bomb by \$2.512M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

Schedule: SDB II Milestone C was approved June 2015.

Changes in the funding profile in FY 2016 to SDB II F-18 Integration will result in the delay of Jettison Test Vehicles (JTV's) procurements from FY 2016 to FY 2017, a reduction in Operational Flight Plan (OFP) support in SDB II F-18 Integration, and a delay of type II carriage OFP coding by both Raytheon Missile Systems (RMS) and Raytheon Technical Services Corporation (RTSC). The remaining funding for OFP support will maintain the development of Universal Armament Interface (UAI) coding in H14 which is a critical component for the H14 software build and crucial to maintain schedule of H14 and SDB II integration. Changes in the funding profile to JMM BRU will result in the delay of F-35 Environmental Qualification testing to from FY 2016 to FY 2017.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 1663 / <i>SDB II F-18 Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
1663: <i>SDB II F-18 Integration</i>	0.000	33.626	19.642	52.616	-	52.616	50.446	34.114	5.797	5.940	Continuing	Continuing
Quantity of RDT&E Articles		21	27	64	-	64	-	-	-	-		

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 IOC.

FY2014 funding resides in PE 0204136N, PU 1662 F/A-18 Improvement.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: F/A-18 Integration	33.626	19.642	52.616	0.000	52.616
Articles:	21	27	64	-	64
FY 2015 Accomplishments:					
Began H-14+ Operational Flight Plan (OFP) coding for Universal Armament Interface (UAI) and SDB II/JMM BRU integration. Contract with SDB and JMM BRU prime contractors for models and support required for wind tunnels. Wind Tunnel testing for Modeling Separation and Loads at Arnold AFB. Contract with SDB and JMM BRU prime contractors for 11 SDB Jettison Test Vehicles (JTV), 5 SDB Instrumented Measurement Vehicles (IMV), and 5 JMM BRU IMVs for flight testing.					
FY 2016 Plans:					
Continue OFP software coding, to include UAI. Purchase weapon and rack test assets required. Wind Tunnel testing for Modeling High Speed Performance at NASA Ames will begin. Deliver 11 JTV, and 5 IMVs for Flight Testing. Conduct ground testing, fit checks and flutter flights at NAS Pax River, MD. Contract with SDB prime contractor for, 16 SDB Weapons System Simulators (WSS), and 2 SDB Electromagnetic Environment Effects (E3)/Hazard of Electromagnetic Radiation to Ordnance (HERO) test assets for flight testing. Contract with JMM BRU prime contractor for 5 JMM BRU WSSs, and 4 Telemetry JMM BRU assets fro flight testing.					
FY 2017 Base Plans:					
Continue H-14+ OFP software coding. Complete Cantilever Ground Vibration Test (GVT). Begin Developmental Test (DT) efforts to include Loads, Flying Qualities, Noise and Vibe, Captive Carry and Weapon Separation					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 1663 / <i>SDB II F-18 Integration</i>
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
testing. Contract with SDB Prime contractor for 49 SDB JTVs for flight testing. Contract with JMM BRU Prime contractor for 15 JTVs for flight testing. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	33.626	19.642	52.616	0.000	52.616

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PE0204136N/1662: <i>SDB II Integration</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.300

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: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 1663 / <i>SDB II F-18 Integration</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OFP Development and Support	SS/IDIQ	Boeing : St. Louis, MO	0.000	12.334	Feb 2015	7.000	Jan 2016	15.012	Jan 2017	-		15.012	32.876	67.222	67.222
SDB II Prime Contractor Support	SS/IDIQ	Raytheon Missile Systems : Tuscon, AZ	0.000	5.000	Jun 2015	1.607	May 2016	13.232	Jan 2017	-		13.232	24.955	44.794	44.794
JMM BRU Prime Contractor Support	SS/IDIQ	Raytheon Technical Services Company, LLC : Indianapolis, IN	0.000	5.554	Jun 2015	1.111	May 2016	6.822	Jan 2017	-		6.822	16.681	30.168	30.168
SDB II/JMM BRU Integration Support	WR	NAWC AD : Patuxent River, MD	0.000	2.000	Nov 2014	2.200	Nov 2015	2.788	Nov 2016	-		2.788	Continuing	Continuing	Continuing
SDB II/JMM BRU Software Support	WR	NAWC WD : China Lake, CA	0.000	2.538	Nov 2014	2.186	Nov 2015	2.773	Nov 2016	-		2.773	Continuing	Continuing	Continuing
Subtotal			0.000	27.426		14.104		40.627		-		40.627	-	-	-

Remarks
 Funding for SDB II (Raytheon Missile Systems) and JMM BRU (Raytheon Technical Services Corporation) Prime Contractors includes support of Super Hornet Integration efforts. Increase from FY 2016 to FY 2017 is to procure test articles in support of DT and OT testing.

Funding for Boeing includes software coding of Operational Flight Program Build H-14+, to include Universal Armament Interface (UAI) and F/A-18 E/F aircraft support required to meet the FY 2020 IOC.

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.

Schedule: SDB II Milestone C was approved June 2015.

Change in funding profile in FY 2016 to PU 1663 will result in the delay of Jettison Test Vehicles (JTV's) procurements from FY 2016 to FY 2017, a reduction in Operational Flight Plan (OFP) support in PU 1663, and a delay of type II carriage OFP coding by both Raytheon Missile Systems (RMS) and Raytheon Technical Services Corporation (RTSC). The remaining funding for OFP support will maintain the development of Universal Armament Interface (UAI) coding in H14 which is a critical component for the H14 software build and crucial to maintain schedule of H14 and SDB II integration. Change in funding profile in FY 2016 to PU 3082 will result in the delay of F-35 Environmental Qualification testing to from FY 2016 to FY 2017.

FY2014 Support funding is included in PE0204136N, PU1662.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 1663 / <i>SDB II F-18 Integration</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	0.000	6.200	Mar 2015	0.000		0.000		-		0.000	0.000	6.200	-
Wind Tunnel Test	MIPR	NASA Ames : Moffett Field, CA	0.000	0.000		0.878	Mar 2016	0.000		-		0.000	0.000	0.878	-
Development Test	WR	VX-23 : Patuxent River, MD	0.000	0.000		4.660	Jan 2016	11.989	Jan 2017	-		11.989	4.399	21.048	-
Operational Test	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.000		-		0.000	13.635	13.635	-
Subtotal			0.000	6.200		5.538		11.989		-		11.989	18.034	41.761	-

Remarks
 Wind Tunnel Testing for Arnold Engineering Development Center (AEDC) is for the Separation and Loads Wind Tunnel Testing. Testing will occur 4th Qtr FY 2015. Wind Tunnel Testing for NASA Ames is for the High Speed Performance Wind Tunnel Testing. Testing will occur 2nd Qtr FY 2016.
 Developmental Test (DT) includes activities such as Loads, Flying Qualities, Noise and Vibe, Captive Carry and Weapon Separation.
 Operational Test funding includes flight tests and support to validate integration of SDB II and F/A-18 E/F.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	33.626	19.642	52.616	-	52.616	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>F/A-18 E/F SDB II Integration</i>				
Acquisition Milestones: IOC	4	2020	4	2020
Systems Development: OFP Development and Integration	1	2015	1	2019
Test & Evaluation: Test Article Deliveries	1	2016	3	2019
Test & Evaluation: Wind Tunnels	4	2015	3	2016
Test & Evaluation: Developmental Test	1	2016	4	2019
Test & Evaluation: Operational Test	4	2019	3	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>				Project (Number/Name) 3072 / <i>Small Diameter Bomb (SDB)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3072: <i>Small Diameter Bomb (SDB)</i>	142.835	11.159	29.329	37.605	-	37.605	57.913	72.769	70.921	56.340	21.856	500.727
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SDB II Weapon Support	7.035	12.123	13.863	0.000	13.863
Articles:	-	-	-	-	-
Description: Funding provides for SDB II Engineering Manufacturing and Development (EMD) efforts including weapon vendor support, test assets, and government support.					
FY 2015 Accomplishments: Continue support of EMD and integration of SDB II with F-35B and F-35C. Continue support of SDB II prime contractor and government support of weapon development efforts. Begin specific F-35B and F-35C efforts with SDB II prime contractor which were delayed to FY15 to accommodate the JSF OFP change from Block 3 to Block 4.					
FY 2016 Plans: 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.					
FY 2017 Base Plans: 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 and bay modifications.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: JSF Integration</p> <p align="right">Articles:</p> <p>Description: 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>FY 2015 Accomplishments: Continue F-35 UAI OFP development and coding and support fit checks and testing with SDB II Weapon vendor. Full manning of JSF prime contractor team to support SDB II and JMM BRU development and integration.</p> <p>FY 2016 Plans: 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>FY 2017 Base Plans: 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 Operational Flight Plan (OFP) software development.</p> <p>FY 2017 OCO Plans: N/A</p>	4.124	17.206	23.742	0.000	23.742
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	11.159	29.329	37.605	0.000	37.605

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE,AF/0604329F: <i>Small Diameter Bomb</i>	61.774	32.624	31.378	-	31.378	13.606	15.840	18.967	6.496	0.000	1,147.224
• MPAF/0207327F: <i>Small Diameter Bomb</i>	35.125	65.523	93.114	-	93.114	79.561	69.873	171.174	317.988	1,194.200	2,026.558
• WPN/2238: <i>Small Diameter Bomb</i>	0.000	0.000	0.000	-	0.000	20.910	92.117	121.647	117.741	413.163	765.578

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

The SDB Increment 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: PB 2017 Navy **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	28.764	2.600	Mar 2015	4.121	Mar 2016	7.725	Mar 2017	-		7.725	113.160	156.370	156.656
Aircraft Integration - JSF	C/CPFF	Lockheed Martin : Fort Worth, TX	18.155	1.704	Jul 2015	12.143	Jan 2016	7.005	Jan 2017	-		7.005	0.000	39.007	39.007
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	-
Subtotal			62.416	4.304		16.264		14.730		-		14.730	113.160	210.874	-

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 FY16 to move hydraulic lines and latches to accommodate the SDB II weapon and JMM BRU rack.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	6.114	2.420	Feb 2015	7.000	Jan 2016	17.316	Jan 2017	-		17.316	61.279	94.129	92.709
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	-
Subtotal			23.524	2.420		7.000		17.316		-		17.316	61.279	111.539	-

Remarks
 Studies and Analyses include Navy activities to define 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: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3072 / <i>Small Diameter Bomb (SDB)</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 JSF is the UAI, OFF, and mission planning which supports the SDB II program. Incrementally funded contract was awarded in FY14 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.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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		0.000		-		0.000	23.704	23.704	23.704
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	-
Subtotal			11.923	0.000		0.000		0.000		-		0.000	84.378	96.301	-

Remarks
 Developmental T&E (DT) and Operational T&E (OT) include all aspects of the weapon system - SDB II, JMM BRU, and F-35B and F-35C aircraft OFF. 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 FY21 to support FY22 IOC.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	2.195	0.505	Nov 2014	0.520	Nov 2015	0.530	Nov 2016	-		0.530	1.732	5.482	-
Government Support	WR	NAWC WD : China Lake, CA	23.650	2.730	Nov 2014	2.882	Nov 2015	2.598	Nov 2016	-		2.598	8.567	40.427	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3072 / <i>Small Diameter Bomb (SDB)</i>
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Small Diameter Bomb II	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
Acquisition Milestones	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
Milestones			MS C (USAF only) ▲																									
Systems Development	Engineering Manufacturing and Development (EMD)																											
Hardware Development	F-35 UAI Software Coding																											
Universal Armament Interface (UAI)																												
Test & Evaluation																												
Technical Evaluation	Developmental Test																											
Operational Test																												
Production Milestones																												
Contract Awards			Lot 1 (USAF Only, MPAF) ●		Lot 2 Contract Award (USAF Only) ●		Lot 3 Contract Award (USAF Only) ●		Lot 4 Contract Award (USAF and DoN) (MPAF and WPN) ●		Lot 5 Contract Award (USAF and DoN) (MPAF and WPN) ●		Lot 6 Contract Award (USAF and DoN) ●		Lot 6 Contract Award (USAF and DoN) ●													
Deliveries																												
Lot 1 Deliveries (USAF 144 units)																												
Lot 2 Deliveries (USAF 250 units)																												
Lot 3 Deliveries (USAF 312 units)																												
Lot 4 Deliveries (USAF 370; DoN 90 units)																												
Lot 5 Deliveries (USAF 300; DoN 750 units)																												

2017DON - 0604329N - 3072

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3072 / <i>Small Diameter Bomb (SDB)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Small Diameter Bomb II</i>				
Acquisition Milestones: Milestones: MS C (USAF only)	3	2015	3	2015
Systems Development: Hardware Development: Engineering Manufacturing and Development (EMD)	1	2015	4	2021
Systems Development: Universal Armament Interface (UAI): F-35 OFP Software Coding	2	2015	1	2021
Test & Evaluation: Technical Evaluation: Developmental Test	2	2020	4	2021
Test & Evaluation: Technical Evaluation: Operational Test	4	2021	4	2021
Production Milestones: Contract Awards: Lot 1 Contract Award (USAF Only) (Missile Procurement, AF)	4	2015	4	2015
Production Milestones: Contract Awards: Lot 2 Contract Award (USAF Only) (Missile Procurement, AF)	2	2016	2	2016
Production Milestones: Contract Awards: Lot 3 Contract Award (USAF Only) (Missile Procurement, AF)	1	2017	1	2017
Production Milestones: Contract Awards: Lot 4 Contract Award (USAF and DoN) (MPAF and WPN)	1	2018	1	2018
Production Milestones: Contract Awards: Lot 5 Contract Award (USAF and DoN) (MPAF and WPN)	1	2019	1	2019
Production Milestones: Contract Awards: Lot 6 Contract Award (USAF and DoN) (MPAF and WPN)	1	2020	1	2020
Production Milestones: Contract Awards: Lot 7 Contract Award (USAF and DoN) (MPAF and WPN)	1	2021	1	2021
Deliveries: Lot 1 Deliveries (USAF only 144 units)	3	2016	3	2017
Deliveries: Lot 2 Deliveries (USAF only 250 units)	3	2017	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3072 / <i>Small Diameter Bomb (SDB)</i>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Deliveries: Lot 3 Deliveries (USAF only 312 units)	3	2018	3	2019
Deliveries: Lot 4 Deliveries (USAF 370; DoN 90 units)	3	2019	3	2020
Deliveries: Lot 5 Deliveries (USAF 300; DoN 750 units)	3	2020	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / <i>JMM BRU</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3082: <i>JMM BRU</i>	24.964	9.165	8.173	7.401	-	7.401	4.647	3.457	3.447	3.519	Continuing	Continuing
Quantity of RDT&E Articles		5	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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Joint Miniature Munitions Bomb Rack Unit (JMM BRU) Government Support	4.013	4.144	4.605	0.000	4.605
Articles:	-	-	-	-	-
Description: Funding provided for the SDB II Carriage System support and integration into Navy environments.					
FY 2015 Accomplishments: Complete TD phase and enter Engineering and Manufacturing Development (EMD) phase with prime contractor. Successful completion of Milestone B, to include System Engineering Technical Review (SETR) events, Cost Sufficiency Review and Program Sufficiency Review and all associated documentation and permission to enter EMD phase with prime contractor. Conduct DoN logistics efforts to include design and development of Peculiar Support Equipment (PSE) for JMM BRU. Begin development of Common Aviation Armament Test Set (CAATS) software required for JMM BRU.					
FY 2016 Plans: 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.					
FY 2017 Base Plans: Continue Engineering Management Development (EMD) phase with prime contractor. EMD Flight Test Phase with prime contractor will be awarded.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / JMM BRU

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
<p>Title: Joint Miniature Munitions Bomb Rack (JMM BRU) Prime Contractor</p> <p align="right">Articles:</p> <p>Description: Prime Contractor Support of JMM BRU (BRU-61A/A) TD/EMD contract.</p> <p>FY 2015 Accomplishments: Complete Technology Development (TD) and incorporate changes to the design of the JMM BRU filter and the Suspension and Release Assembly (S&RA). Purchase 2 JMM BRU prototypes and 3 Weapon System Simulators (WSS). Complete Preliminary Design Review (PDR). Execute Engineering and Manufacturing Development (EMD) contract. JMM BRU prime contractor fully manned to complete EMD phase.</p> <p>FY 2016 Plans: 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>FY 2017 Base Plans: Continue Engineering Management Development (EMD) phase with prime contractor; deliver 2 Instrumented Measurement Vehicles and 4 Telemetry JMM BRUs.</p> <p>FY 2017 OCO Plans: N/A</p>	5.152 5	4.029 6	2.796 -	0.000 -	2.796 -
Accomplishments/Planned Programs Subtotals	9.165	8.173	7.401	0.000	7.401

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/072000: War Consumables/BRU-61 A/A	0.000	0.000	0.000	-	0.000	13.517	17.337	17.672	17.971	47.040	113.537
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / <i>JMM BRU</i>

D. Acquisition Strategy

The JMM BRU is an Air Force led ACAT III program. Industry day was held 4Q FY2010, acquisition strategy approved 1Q FY 2011 and Material Development Decision (MDD) 2Q FY 2011. Competitive source selection conducted with Technology Development contract award 3Q FY2013. Milestone B was completed and Engineering, Manufacturing, and Development (EMD) contract awarded 4Q FY2015.

E. Performance Metrics

Earned value management is being implemented on the TD/EMD contract.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / <i>JMM BRU</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Joint Miniature Munitions Bomb Rack Unit (JMM BRU)	C/FPIF	Raytheon Technical Services Company LLC : Indianapolis, IN	11.532	5.204	Jul 2015	4.029	Apr 2016	2.927	Apr 2017	-		2.927	7.456	31.148	33.565
Subtotal			11.532	5.204		4.029		2.927		-		2.927	7.456	31.148	33.565

Remarks
 Funding provided to Raytheon Technical Services Company LLC for development of a JMM BRU SDB II carriage system which satisfies DoN environments. JMM BRU will carry four SDB II's and will be capable of being used both internally and externally.
 Changes in FY 2016 funding profile to PU 3082 resulted in delay of F-35 Environmental Qualification testing to FY 2017.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
CAATS	Various	NAWC AD : Lakehurst	1.323	0.000		0.777	Feb 2016	1.125	Feb 2017	-		1.125	0.919	4.144	-
Subtotal			1.323	0.000		0.777		1.125		-		1.125	0.919	4.144	-

Remarks
 Common Aircraft Armament Test Set (CAATS) is the intermediate level test set required for JMM BRU to verify rack functionality. CAATS must be modified to support additional power requirements and interfaces of the JMM BRU.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Flight Test	Various	Various : Various	0.000	0.000		0.000		0.631	Mar 2017	-		0.631	0.644	1.275	-
Subtotal			0.000	0.000		0.000		0.631		-		0.631	0.644	1.275	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / <i>JMM BRU</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			

Remarks
 DT and OT efforts are budgeted for in the SDB II project unit as DT and OT will be for total weapon system. There will be no dedicated JMM BRU DT and OT. Funding in FY 2017 and cost to complete will fund captive carry flight testing.

 Developmental Test squadrons and locations for F-35B and F-35C are still uncertain as squadrons are being established.

 Flight Test conducted will be fit checks on F-35B and F-35C with the new JMM BRU.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
Government Support	WR	NAWC WD : China Lake, CA	6.305	2.915	Nov 2014	2.395	Nov 2015	2.002	Nov 2016	-		2.002	Continuing	Continuing	Continuing
Government Support	WR	Various : Various	5.231	0.842	Nov 2014	0.872	Nov 2015	0.616	Nov 2016	-		0.616	1.923	9.484	-
Contractor Services	MIPR	AFLCMC : Eglin AFB, FL	0.377	0.129	Dec 2014	0.000	Nov 2015	0.000		-		0.000	0.750	1.256	-
Travel	MIPR	ASC20OG : Eglin AFB, FL	0.196	0.075	Oct 2014	0.100	Oct 2015	0.100	Oct 2016	-		0.100	1.250	1.721	-
Subtotal			12.109	3.961		3.367		2.718		-		2.718	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		24.964	9.165	8.173	7.401	7.401	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / <i>Small Diameter Bomb (SDB)</i>	Project (Number/Name) 3082 / <i>JMM BRU</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Joint Miniature Munitions Bomb Rack Unit (JMM BRU)</i>				
Acquisition Milestonees: Milestones: Milestone B	4	2015	4	2015
Acquisition Milestonees: Milestones: Milestone C	2	2018	2	2018
Acquisition Milestonees: Milestones: Full Rate Production (FRP) Decision	1	2020	1	2020
Systems Development: Hardware Development: Technology Development	1	2015	3	2015
Systems Development: Hardware Development: Engineering Manufacturing and Development (EMD)	3	2015	2	2018
Systems Development: Reviews: Preliminary Design Review (PDR)	2	2015	2	2015
Systems Development: Reviews: Critical Design Review (CDR)	1	2016	1	2016
Test & Evaluation: Technical Evaluation: Design Verification	1	2015	1	2016
Test & Evaluation: Technical Evaluation: Environmental Qualification	1	2017	4	2017
Test & Evaluation: Technical Evaluation: EMD Flight Test	4	2017	4	2021
Procurement: LRIP 1 Contract Award	2	2018	2	2018
Procurement: LRIP 2 Contract Award	2	2019	2	2019
Procurement: FRP Contract Award (Lot 3)	2	2020	2	2020
Procurement: FRP Contract Award (Lot 4)	2	2021	2	2021
Deliveries: LRIP 1 Deliveries	4	2019	4	2020
Deliveries: LRIP 2 Deliveries	4	2020	4	2021
Deliveries: FRP (Lot 3) Deliveries	4	2021	4	2021