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

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605931F / <i>B-2 Defensive Management System</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	630.820	95.440	271.961	315.615	0.000	315.615	265.910	152.759	84.642	20.807	0.000	1,837.954
653844: <i>B-2 DMS</i>	630.820	95.440	271.961	315.615	0.000	315.615	265.910	152.759	84.642	20.807	0.000	1,837.954
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 431

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

The Defensive Management System Modernization (DMS-M) program enhances the B-2 direct attack capability by addressing emerging and future 21st century threats and robust modern Integrated Air Defense Systems (IADS). By leveraging "state-of-the-art" electronic warfare antennae, processors, controllers and displays, B-2 aircrews will realize unprecedented situational battlespace awareness and dynamic, real-time threat avoidance in the most complex radio frequency emitter environments. The inherent increased sensitivity of the modernized DMS over the legacy system, with increased processing power, will build a battlespace picture that could be shared with joint force platforms by on-board communication systems. The current B-2 DMS was designed in the 1980s and has not received any upgrades to date. Also, many components of the legacy DMS are not supportable and will severely impact aircraft availability without significant investment in reliability and maintainability upgrades.

During development, the engineering baseline will be finalized and four production representative kits will be procured to support integrated development/operational test and a pre-Milestone C Operational Assessment, as well as B-2 Nuclear Certification testing. After completion of the Milestone C decision, Low Rate Initial Production will begin in FY 2020. After a successful Operational Test and Evaluation, the Full Rate Production decision will occur in FY 2021. Diminishing manufacturing sources and materiel shortages for affected components and subassemblies, will be addressed to protect the planned production program by mitigating unplanned part redesign and requalification risks.

In the FY 2017 budget request, the B-2 DMS-M program was baselined to the USAF Service Cost Position, and the budget was adjusted to the Service Cost Position.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	98.768	271.961	247.860	0.000	247.860
Current President's Budget	95.440	271.961	315.615	0.000	315.615
Total Adjustments	-3.328	0.000	67.755	0.000	67.755
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-3.328	0.000			
• Other Adjustments	0.000	0.000	67.755	0.000	67.755

**Change Summary Explanation**

FY17 +\$67.755M added to fund DMS-M to the October 2015 Service Cost Position

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<b>Title:</b> B-2 Defensive Management System Modernization (DMS-M) Tech Development Phase 2	95.440	29.000	0.000	0.000	0.000
<b>Description:</b> DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.					
<b>FY 2015 Accomplishments:</b> Definitized the Technology Development Phase 2 Undefined Contract Award. Continued the Technology Development Phase 2 effort. Continued preparation for the Milestone B Defense Acquisition Board. Released the Engineering and Manufacturing Development (EMD) Request for Proposal (RFP).					
<b>FY 2016 Plans:</b> Complete the Technology Development Phase 2 effort.					
<b>FY 2017 Base Plans:</b> N/A					
<b>FY 2017 OCO Plans:</b> N/A					
<b>Title:</b> B-2 Defensive Management System Modernization (DMS-M) EMD	0.000	242.961	315.615	0.000	315.615

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><b>Description:</b> DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> Award the EMD contract and initiate the EMD Phase. Complete the system Critical Design Review (CDR).</p> <p><b>FY 2017 Base Plans:</b> Install the first DMS-M kit on the test aircraft, conduct Low Observable baseline flights, accomplish the Integrated Functional Capability certification, and complete ground testing in preparation for the start of Developmental Test and Evaluation (DT&amp;E) in FY18.</p> <p><b>FY 2017 OCO Plans:</b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	95.440	271.961	315.615	0.000	315.615

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	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
• APAF: BA07: Line Item #b2dms0: <i>B-2 DMS</i>	0.000	0.000	0.000	0.000	0.000	0.000	49.884	280.497	365.563	108.000	803.944
• APAF: BA07: Line Items # 000999: <i>Acft Initial Spares &amp; Repairs</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.956	-	-
• APAF: BA07: Line Item #000075: <i>Other Production Charges</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.756	-	-

**Remarks**

**E. Acquisition Strategy**  
 Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor (Northrop Grumman) who will perform subsystem and component competitions where appropriate, use of cost plus incentive fee (CPIF) development contracts, and the combination of developmental upgrades with

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3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	PE 0605931F / <i>B-2 Defensive Management System</i>

software sustainment blocks to minimize the number of software releases, aircraft downtime, and differences in fielded configurations. The government will encourage the prime contractor to compete subsystems and key components to reduce cost and risk.

**F. Performance Metrics**

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605931F / B-2 Defensive Management System	<b>Project (Number/Name)</b> 653844 / B-2 DMS
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<b>Product Development (\$ in Millions)</b>				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			
Air Vehicle - Technology Development	SS/CPFF	Various : Various	608.213	92.282	Mar 2015	29.000	Oct 2015	0.000		0.000		0.000	0.000	729.495	-
Air Vehicle - Engineering and Manufacturing Development (EMD)	SS/CPIF	Various : Various	0.000	0.000		227.658	Feb 2016	292.616	Dec 2016	0.000		292.616	461.433	981.707	TBD
<b>Subtotal</b>			608.213	92.282		256.658		292.616		0.000		292.616	461.433	1,711.202	-

**Remarks**  
Northrop-Grumman, El Segundo, CA is the prime contractor and integrator.

Major subsystem vendors are:  
Electronic Support Measures: BAE, Nashua NH  
Advanced Graphics Processor: Lockheed-Martin, Owego, NY  
Band 1 - 3 antennas: Randtron, Menlo Park CA  
Band 4 antenna: Ball Aerospace, Westminster, CO

The acquisition phase formerly known as Technology Development (TD) is now referred to as Technology Maturation and Risk Reduction (TMRR)

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				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 Test	MIPR	AFFTC : Various	3.224	0.845	Jan 2015	4.300	Jan 2016	13.062	Jan 2017	0.000		13.062	32.921	54.352	TBD
<b>Subtotal</b>			3.224	0.845		4.300		13.062		0.000		13.062	32.921	54.352	-

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605931F / B-2 Defensive Management System	<b>Project (Number/Name)</b> 653844 / B-2 DMS
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<b>Management Services (\$ in Millions)</b>				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			
PMA	Various	Various : Various	19.383	2.313	Dec 2014	11.003	Dec 2015	9.937	Dec 2016	0.000		9.937	29.764	72.400	-
<b>Subtotal</b>			19.383	2.313		11.003		9.937		0.000		9.937	29.764	72.400	-
<b>Project Cost Totals</b>			630.820	95.440		271.961		315.615		0.000		315.615	524.118	1,837.954	-

**Remarks**  
Northrop-Grumman, the prime contractor for the B-2 weapon system, is the integrator and major contractor for B-2 DMS activities.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605931F / <i>B-2 Defensive Management System</i>	<b>Project (Number/Name)</b> 653844 / <i>B-2 DMS</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DMS-M Milestone B Decision					■																							
DMS-M EMD Contract Award						■																						
DMS-M Critical Design Review											■																	
DMS-M EMD																												
DMS-M Combined Developmental Test / Operational Test (DT/OT)																												
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision																												
DMS-M Low Rate Initial Production (LRIP)																												
DMS-M Full Rate Production (FRP) Decision																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605931F / <i>B-2 Defensive Management System</i>	<b>Project (Number/Name)</b> 653844 / <i>B-2 DMS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DMS-M Milestone B Decision	1	2016	1	2016
DMS-M EMD Contract Award	2	2016	2	2016
DMS-M Critical Design Review	4	2016	4	2016
DMS-M EMD	2	2016	1	2020
DMS-M Combined Developmental Test / Operational Test (DT/OT)	1	2018	1	2021
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision	1	2020	1	2020
DMS-M Low Rate Initial Production (LRIP)	1	2020	4	2021
DMS-M Full Rate Production (FRP) Decision	1	2021	1	2021