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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS
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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	80.225	112.691	108.183	152.458	0.000	152.458	221.403	300.607	256.238	134.141	Continuing	Continuing
675345: <i>B-2 Modernization</i>	60.498	93.020	94.621	76.212	0.000	76.212	42.336	40.690	36.145	26.285	Continuing	Continuing
676021: <i>BASELINE SUPPORT</i>	19.727	19.671	13.562	13.660	0.000	13.660	13.926	14.189	14.452	14.708	Continuing	Continuing
676022: <i>AEHF Strategic Comm</i>	0.000	0.000	0.000	62.586	0.000	62.586	165.141	245.728	205.641	93.148	Continuing	Continuing

Note

This program, BA 07 PE 0101127F, project 675345, B-2 Joint Air-to-Surface Standoff Missile - Extended Range (JASSM-ER) Integration, is a new start.
 This program, BA 07 PE 0101127F, project 675345, B-2 Cryptographic Modernization, is a new start.
 This program, BA 07 PE 0101127F, project 675345, B-2 Adaptable Communications Suite (ACS), is a new start.

Beginning in FY 2017, B-2 AEHF efforts will be tracked under PE 0101127F (B-2 Squadrons), Project 676022 (AEHF Strategic Comm).

A. Mission Description and Budget Item Justification

The B-2 Spirit is the world's most advanced long-range strike asset. The unique combination of range, precision, payload, and ability to penetrate and operate in anti-access/area denial environments allow the B-2 to identify, locate, target, and destroy the highest value enemy targets. The B-2 can, with necessary upgrades, accomplish its mission regardless of location, return to base safely, and permit freedom of movement for follow-on forces, including other long range strike platforms. An array of planned RDT&E projects are necessary to preserve a strategic advantage against 21st century threats as well as increase flexibility, lethality, and survivability of this national asset tasked across a broad spectrum of tactical and national strategic objectives. B-2 will achieve these objectives by adapting mature technologies/ systems in the fleet to rapidly deliver relevant combat capability, leveraging other Department of Defense investments and programs, utilizing innovative acquisition strategies.

The B-2 has a projected service life through 2058. To ensure the fleet can accomplish its nuclear and conventional mission in highly defended and anti-access environments, periodic modernization efforts must be undertaken to upgrade combat capability as well as improve the viability, supportability, and survivability of the weapon system.

Recent and ongoing investments in avionics, structures, communications, and weapons keep the B-2 viable in the immediate future. Current system upgrades include Low Observable Signature and Supportability Modifications, Defensive Management System Modernization, Flexible Strike Phase 1, alternative communication solutions such as Common Very Low Frequency Receiver and B-2 AEHF (Strategic Communications), Extended Range Joint Air-to-Surface Standoff Missile weapon integration and Global Positioning System enhancements. The B-2 is also exploring opportunities for architecture updates to reduce future integration costs and improve program affordability. The Defensive Management System effort is documented in the exhibit for PE 0605931F.

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In addition to the B-2 improvements described above, the Air Force has continuing efforts for Training Systems, Mission Planning System improvements, flight test aircraft upgrades and base of operations support, integration and testing of upgraded cryptographic components, as well as B-2 platform studies and acquisition planning.

This program is in Budget Activity 7, Operational System Development. This budget activity includes developmental efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	116.580	108.183	69.768	0.000	69.768
Current President's Budget	112.691	108.183	152.458	0.000	152.458
Total Adjustments	-3.889	0.000	82.690	0.000	82.690
• 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	-3.889	0.000			
• Other Adjustments	0.000	0.000	82.690	0.000	82.690

Change Summary Explanation

FY17: +\$62.586M for B-2 AEHF (Strategic Communication), +\$3.961M for Cryptographic Modernization, and +\$16.553M was added for Flexible Strike Phase 1,

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS				Project (Number/Name) 675345 / B-2 Modernization			
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
675345: B-2 Modernization	60.498	93.020	94.621	76.212	0.000	76.212	42.336	40.690	36.145	26.285	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 07 PE 0101127F, project 675345, B-2 Joint Air-to-Surface Standoff Missile - Extended Range (JASSM-ER) Integration, is a new start.
 This program, BA 07 PE 0101127F, project 675345, B-2 Cryptographic Modernization, is a new start.
 This program, BA 07 PE 0101127F, project 675345, B-2 Adaptable Communications Suite (ACS), is a new start.

In FY17 and subsequent the B-2 AEHF strategic communications effort is documented in Project 676022 AEHF Strategic Comm.

A. Mission Description and Budget Item Justification

The B-2 is currently undergoing modernization of avionics/communications systems, engines, armament systems, low observable components, core training system components, aircraft supportability improvements, support equipment development.

The Air Force will also study multiple structural, avionics, and engine modifications that could improve the performance of the aircraft and engines and reduce maintenance manhours and the logistics footprint of the fleet. Focus of the studies will be on non-mission capable (maintenance) drivers, safety issues, and obsolescence issues through modernization of key components in the airframe, avionics, and engines resulting in improved aircraft availability of a high demand/low density fleet.

Modern communications are key enablers for the B-2 in the anti-access/area denial battlespace, and directly enhance lethality and force multiplication. The Common Very Low Frequency (VLF) Receiver effort develops and integrates a receive-only, low bandwidth receiver and antenna subsystem to provide a secure, survivable strategic nuclear communication capability for the B-2. The receiver will be adaptable for use by other Department of Defense platforms. B-2 Cryptographic Modernization, an FY 2017 new start, updates cryptographic equipment for B-2 AIT/ARC-234, AN/ARC-211 and MIDS/LVT communication systems. The Adaptive Communication Suite (ACS) is an FY 2017 new start to explore incremental improvements to the B-2 ACS UHF communication system. The B-2 AEHF effort was established in Project 675345 B-2 Modernization; the B-2 AEHF effort continues in FY 2017 and subsequent years under Project 676022 AEHF Strategic Comm.

B-2 Armament upgrades integrate new and/or advanced weapons on the B-2 to attack a wider array of target sets, to include hardened, deeply buried targets, as well as destroy more targets per sortie. The Flexible Strike Phase 1 program will rehost the current B-2 stores management software onto a new integrated processor. B-2 will also integrate the Joint Air-to-Surface Standoff Missile Extended Range (JASSM-ER) weapon to further enhance the B-2's ability to attack and destroy high value target sets.

Low Observable Signature and Supportability Modifications (LOSSM) directly address B-2 aircraft availability. Given the extremely small fleet size (20 aircraft), mission accomplishment is particularly sensitive to the availability of this high-demand strategic asset. LOSSM projects increase aircraft availability, decrease low observable (LO) maintenance, and maintain and improve the combat-ready LO signature for the B-2 fleet ensuring survivable combat operations. LOSSM projects improve

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materials, structures, and diagnostic tools necessary to evaluate LO materials and systems in the B-2 fleet. LOSSM structure improvement projects include, but are not limited to, advanced high frequency materials placement, windshield bounce patch and tape improvements, composite plies, advanced signature reduction, and radar radome and antennae improvements. Material improvements include, but are not limited to, tailpipe and inlet coatings, pre-cured gap fillers, and other advanced LO materials development. Diagnostic tool efforts include, but are not limited to, improved radar frequency diagnostics, Signature Diagnostic System database upgrades, Tier One Material Inspection System improvements, Portable Laser Removal Tool development, Next Generation Mapper, SCI-2K Radar, Mobile Diagnostics Laboratory, Ground Air Radar System development, and other low observable special test equipment and information systems upgrades.

The B-2 Training System upgrades include updates to training device hardware and components, simulation software, courseware and academic materials, instructional system design architectures, engineering drawings, and system documentation that is not driven by a funded aircraft modification.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: B-2 Common Very Low Frequency Receiver (CVR)</p> <p>Description: Provides secure, survivable, receive-only strategic nuclear communication for the B-2.</p> <p>FY 2015 Accomplishments: Continued Engineering and Manufacturing Development efforts and conducted Preliminary Design Review and System Critical Design Review.</p> <p>FY 2016 Plans: Continue Engineering and Manufacturing Development efforts, conduct Flight Test, and prepare for entry into Production. Procure four shipsets of developmental CVR hardware, of which one will be installed in the dedicated B-2 test aircraft, two will be installed in the Force Development Evaluation aircraft, and one will initially be a ready spare for testing and eventually installed in a fleet aircraft.</p> <p>FY 2017 Base Plans: Complete two installations of developmental (EMD) CVR hardware to support additional Emergency Action Message collection required to upgrade B-2 from Interim Authority to Operate to Authority to Operate status, update technical orders, and design and integrate CVR into the B-2 training system.</p> <p>FY 2017 OCO Plans: N/A</p>	48.273	42.070	16.709	0.000	16.709
<p>Title: B-2 Flexible Strike Phase 1</p> <p>Description: Rehost the currently separate Stores Management Operational Flight Programs onto the new integrated processor unit made available by the B-2 EHF Increment 1 program.</p> <p>FY 2015 Accomplishments:</p>	40.273	39.683	44.832	0.000	44.832

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continued Engineering and Manufacturing Development efforts and conducted Critical Design Review. FY 2016 Plans: Continue Engineering and Manufacturing Development efforts. Conduct software/hardware integration testing and flight test. FY 2017 Base Plans: Continue Engineering and Manufacturing Development efforts. Conduct software/hardware integration testing and flight test. Prepare for entry into Production. FY 2017 OCO Plans: N/A					
Title: Low Observable Signature and Supportability Mods and Trainers Description: B-2 Low Observable Signature and Supportability Modifications (LOSSM) pursues multiple low-cost development efforts for Low Observable (LO) materials, diagnostics and procedures to enhance LO signature and/or improve aircraft supportability, as well as other development or study efforts for training system improvements FY 2015 Accomplishments: Continued development of on-going Low Observable Signature and Supportability Modifications and Training System core upgrades. FY 2016 Plans: Continue development of on-going Low Observable Signature and Supportability Modifications and Training System core upgrades. FY 2017 Base Plans: Continue development of on-going Low Observable Signature and Supportability Modifications and Training System core upgrades. FY 2017 OCO Plans: N/A	4.474	1.942	1.954	0.000	1.954
Title: B-2 AEHF (Strategic Communications)	0.000	10.926	0.000	0.000	0.000

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: B-2 AEHF (Strategic Communications) provides secure, strategic, two-way, survivable Anti-Access/Area Denial communications capability for conventional and nuclear missions. Note: This effort is documented under Project 676022 AEHF Strategic Comm beginning in FY 2017.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Conduct acquisition planning, technology maturation, affordability assessments, and other pre-EMD activities associated with satisfying B-2 communications requirements using extremely high frequency (EHF) and other waveforms.</p> <p>FY 2017 Base Plans: N/A - effort transferred to Project 676022 AEHF Strategic Comm</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: B-2 Joint Air-to-Surface Standoff Missile - Extended Range (JASSM-ER) Integration</p> <p>Description: Integrates the Joint Air to Surface Standoff Missile, Extended Range weapon (JASSM-ER) onto the B-2.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Conduct acquisition planning, affordability assessments, and other pre-EMD activities. Begin Engineering and Manufacturing Development efforts. JASSM-ER integration on the B-2 is a new start development in FY 2017.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	0.000	8.558	0.000	8.558
<p>Title: B-2 Cryptographic Modernization</p> <p>Description: Provides NSA-mandated cryptographic modifications to three communication system components on the aircraft: Advanced Integrated Terminal (AIT) also known as AN/ARC-234 (UHF/VHF Radio), AN/ARC-211</p>	0.000	0.000	3.961	0.000	3.961

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>(HF Radio), and the Multifunction Information Distribution System (MIDS) Low Volume Terminal (Link-16 Terminal).</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Conduct Multifunction Information Distribution System (MIDS) Low Volume Terminal (LVT) Risk Reduction Terminal (RRT) Regression Testing. Cryptographic Modernization is a new start in FY 2017.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: B-2 Adaptable Communications Suite (ACS)</p> <p>Description: The Adaptable Communications Suite provides a non-integrated avionics and communications system that allows the B-2 fleet to receive complete integrated mission data, time sensitive targeting information, intelligence updates, and positive command and control procedures.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Conduct acquisition planning, affordability assessments and requirements maturation associated with providing a permanent beyond line of sight integrated mission data, time sensitive targeting, intelligence update, and positive command and control capability. ACS is a new start development project in FY 2017.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	0.000	0.198	0.000	0.198
Accomplishments/Planned Programs Subtotals	93.020	94.621	76.212	0.000	76.212

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

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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
• APAF: BA05: Line Item #B00200: B-2 CVR Inc 1 Mod Funding, PE 0101127F	0.000	19.190	18.592	0.000	18.592	9.332	4.009	0.000	0.000	0.000	51.123
• APAF: BA05: Line Item # B00200: B-2 Training Support Modification, PE 0809731F	2.203	3.131	9.578	0.000	9.578	9.067	7.864	8.001	8.148	Continuing	Continuing
• APAF:BA05:Line Item #B00200: B-2 Flexible Strike Mod Funding, PE 0101127F	0.000	0.000	4.214	0.000	4.214	6.647	6.547	3.771	0.000	-	-
• APAF: BA07: Line Item #B00200: B-2 Post Production Support, B-2A ICS for CVR Inc 1: PE 0101127F	0.000	0.000	0.010	0.000	0.010	0.131	0.254	0.000	0.000	-	-
• APAF: BA06: Line Item #B00200: B-2 Squadrons, A/ C Initial Spares for CVR Inc 1	0.000	0.000	2.036	0.000	2.036	2.574	0.000	0.000	0.000	-	-
• APAF:BA07: Line Item #B00200: B-2 Depot Activation for CVR Inc 1, PE 0101127F	0.000	2.196	0.761	0.000	0.761	0.508	0.000	0.000	0.000	-	-
• APAF:BA07:Line Item #B00200: B-2 LOSSM Mod Funding, PE 0101127F	6.503	8.496	8.263	0.000	8.263	8.440	8.599	9.683	20.045	Continuing	Continuing

Remarks

D. Acquisition Strategy

Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor (Northrop Grumman), employ the program office as the system integrator when practical, leverage mature technology and systems development investments by other Department of Defense organizations, encourage prime contractor competition of subsystems and key components to reduce risk and cost, use of cost plus incentive fee (CPIF) development contracts, and combine developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime, and differences in fielded configurations.

E. 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

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Product Development (\$ 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
B-2 Flex Strike Phase 1	Various	Various : Various	21.923	30.754	Dec 2014	29.504	Nov 2015	37.874	Oct 2016	0.000		37.874	Continuing	Continuing	-
B-2 Common Very Low Frequency Receiver (CVR)	Various	Various : Various	11.475	42.287	Oct 2014	38.136	Oct 2015	16.164	Oct 2016	0.000		16.164	Continuing	Continuing	-
Low Observable Signature and Supportability Mods	Various	Various : Various	19.912	4.373	Feb 2015	1.707	Feb 2016	1.714	Feb 2017	0.000		1.714	Continuing	Continuing	-
B-2 Advanced Extremely High Frequency Communications	Various	Various : Various	0.000	0.000		10.605	Mar 2016	0.000		0.000		0.000	Continuing	Continuing	-
B-2 Joint Air-to-Surface Standoff Missile - Extended Range (JASSM-ER) Integration	Various	Various : Various	0.000	0.000		0.000		8.284	Jan 2017	0.000		8.284	0.000	8.284	-
B-2 Cryptographic Modernization	Various	Various : Various	0.000	0.000		0.000		3.079	Dec 2016	0.000		3.079	0.000	3.079	-
B-2 Adaptable Communications Suite (ACS)	Various	Various : Various	0.000	0.000		0.000		0.198	Jan 2017	0.000		0.198	0.000	0.198	-
Aircrew Training	Various	Various : Various	2.160	5.378	Dec 2014	3.142	Dec 2015	1.100	Dec 2016	0.000		1.100	Continuing	Continuing	-
Mission Planning	Various	Various : Various	2.860	0.562	Jan 2015	0.509	Jan 2016	0.014	Jan 2017	0.000		0.014	Continuing	Continuing	-
Subtotal			58.330	83.354		83.603		68.427		0.000		68.427	-	-	-

Remarks
 Northrop-Grumman is the prime contractor and serves as integrator and hence main contractor for many (ie "Various"), but not all, B-2 modernization efforts.
 B-2 AEHF (strategic communication) effort continues in FY 2017 and subsequent years under Project 676022 AEHF Strategic Comm

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
Subtotal			-	-		-		-		-		-	-	-	-

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

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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			
Government Test	MIPR	AFFTC : TBD	0.110	4.500	Nov 2014	8.044	Nov 2015	5.150	Nov 2016	0.000		5.150	Continuing	Continuing	-
Subtotal			0.110	4.500		8.044		5.150		0.000		5.150	-	-	-

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			
PMA	Various	Various : TBD	2.058	5.166	Oct 2014	2.974	Oct 2015	2.635	Oct 2016	0.000		2.635	Continuing	Continuing	TBD
Subtotal			2.058	5.166		2.974		2.635		0.000		2.635	-	-	-

			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			60.498	93.020	94.621	76.212	0.000	76.212	-	-	-

Remarks
Award dates listed are the first incremental funding opportunity associated with each cost category.

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

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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Flexible Strike EMD	1	2015	2	2017
Flexible Strike Ph 1 Critical Design Review	2	2015	2	2015
Flexible Strike Ph 1 Milestone C	4	2017	4	2017
Flexible Strike Ph 1 Production Contract Award	4	2017	4	2017
Flexible Strike Production	4	2017	4	2020
Flexible Strike Ph 1 Required Assets Available	4	2019	4	2019
Common Very Low Frequency Receiver Preliminary Design Review	1	2015	1	2015
Common Very Low Frequency Receiver Critical Design Review	3	2015	3	2015
Common Very Low Frequency Receiver EMD	1	2015	3	2017
Common Very Low Frequency Receiver Milestone C	4	2016	4	2016
Low Observable Signature and Supportability Mods and Trainers	1	2015	4	2021
Common Very Low Frequency Receiver Production Contract Award	4	2016	4	2016
Common Very Low Frequency Receiver Required Assets Available	1	2018	1	2018
Common Very Low Frequency Receiver Production	4	2016	2	2019
AEHF Strategic Comm Acq Planning Contract Award	2	2016	2	2016

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Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS				Project (Number/Name) 676021 / BASELINE SUPPORT			
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
676021: <i>BASELINE SUPPORT</i>	19.727	19.671	13.562	13.660	0.000	13.660	13.926	14.189	14.452	14.708	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Baseline Support maintains and upgrades the B-2 unique flight test aircraft as well as hardware/software and test equipment to support developmental systems integration, and flight test, reducing the need for additional operational aircraft and accelerating deployment of advanced operational capabilities to the warfighter. Baseline Support also ensures the Mission Planning System keeps pace with aircraft modifications and improves the mission planning core system. Baseline Support provides for other B-2 unique government costs and includes assorted studies of aircraft performance and cost trades as well as acquisition planning activities, up to and including proposal preparation, for future aircraft, engine, weapon, communication, navigation or other capabilities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Baseline Support Acq Plan/Studies/Integr Tst Spt	4.238	0.395	0.297	0.000	0.297
Description: Baseline Support provides for other B-2 unique government costs, including acquisition planning activities for future capabilities, long range planning, studies, and program integration activities, as well as integration and test support of upgraded crypto components as needed.					
FY 2015 Accomplishments: Continued Baseline Support activities including acquisition planning for future capabilities, long range planning, studies, program integration activities, integration and test support of upgraded crypto components. Refined requirements and studied affordable options to satisfy B-2 communications requirements in an anti-access/area denial environment.					
FY 2016 Plans: Continue Baseline Support activities including acquisition planning for future capabilities, long range planning, studies, program integration activities, integration and test support of upgraded crypto components.					
FY 2017 Base Plans: Continue Baseline Support activities including acquisition planning for future capabilities, long range planning, studies, program integration activities, integration and test support of upgraded crypto components.					
FY 2017 OCO Plans: N/A					
Title: Baseline Support Flight Test	13.176	10.155	10.640	0.000	10.640

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>Description: Description: Baseline Support Flight Test maintains and upgrades the B-2 unique flight test aircraft as well as hardware/software and test equipment to support developmental systems integration and flight test, reducing the need for additional operational aircraft and accelerating deployment of advanced operational capabilities to the warfighter.</p> <p>FY 2015 Accomplishments: Continued B-2 Flight Test activities, maintaining and upgrading the B-2 unique flight test aircraft as well as hardware/software and test equipment, to support developmental systems integration and flight test.</p> <p>FY 2016 Plans: Continue B-2 Flight Test activities, maintaining and upgrading the B-2 unique flight test aircraft as well as hardware/software and test equipment, to support developmental systems integration and flight test.</p> <p>FY 2017 Base Plans: Continue B-2 Flight Test activities, maintaining and upgrading the B-2 unique flight test aircraft as well as hardware/software and test equipment, to support developmental systems integration and flight test.</p> <p>FY 2017 OCO Plans: N/A</p>					
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<p>Title: Baseline Support Mission Planning</p> <p>Description: Description: Baseline Support Mission Planning System improvements ensure the mission planning system keeps pace with aircraft modifications and improves mission planning core systems.</p> <p>FY 2015 Accomplishments: Continued B-2 Mission Planning activities, keeping pace with aircraft modifications and improving mission planning core systems, to include continuation of the transition from the current AFMSS mission planning to the Joint Mission Planning System (JMPS).</p> <p>FY 2016 Plans: Continue B-2 Mission Planning activities, keeping pace with aircraft modifications and improving mission planning core systems, to include continuation of the transition from the current AFMSS mission planning to the Joint Mission Planning System (JMPS).</p> <p>FY 2017 Base Plans:</p>	2.257	3.012	2.723	0.000	2.723
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676021 / BASELINE SUPPORT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue B-2 Mission Planning activities, keeping pace with aircraft modifications and improving mission planning core systems. Deliver mission planning release 4.4, i.e. Joint Mission Planning System (JMPS). <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	19.671	13.562	13.660	0.000	13.660

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

N/A

Remarks

D. Acquisition Strategy

Key elements of the overall acquisition strategy include: use of a sole source contract with a prime/integrating contractor (Northrop Grumman) for most but not all B-2 programs; use of cost plus incentive fee (CPIF) development contracts; and the combination of developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime, and differences in fielded configurations.

E. 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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676021 / BASELINE SUPPORT
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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			
Mission Planning	Various	Various : Various	2.414	2.039	Jan 2015	2.600	Oct 2015	2.248	Oct 2016	0.000		2.248	Continuing	Continuing	TBD
Subtotal			2.414	2.039		2.600		2.248		0.000		2.248	-	-	-

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			
Other Government Costs	Various	Various : Various	13.912	13.372	Oct 2014	8.006	Oct 2015	8.140	Oct 2016	0.000		8.140	Continuing	Continuing	TBD
Subtotal			13.912	13.372		8.006		8.140		0.000		8.140	-	-	-

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			
Government Test	MIPR	AFFTC : TBD	3.260	3.587	Oct 2014	2.559	Oct 2015	2.841	Oct 2016	0.000		2.841	Continuing	Continuing	TBD
Subtotal			3.260	3.587		2.559		2.841		0.000		2.841	-	-	-

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			
PMA	Various	Various : TBD	0.141	0.673	Oct 2014	0.397	Oct 2015	0.431	Oct 2016	0.000		0.431	Continuing	Continuing	TBD
Subtotal			0.141	0.673		0.397		0.431		0.000		0.431	-	-	-

			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			19.727	19.671	13.562	13.660	0.000	13.660	-	-	-

Remarks
Award dates listed are the first incremental funding opportunity associated with each cost category.

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676021 / BASELINE SUPPORT
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	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
Mission Planning Release 4.4 (JMPS)																												
FY15 Flight Test Core Support Contract Award	■																											
FY16 Flight Test Core Support Contract Award					■																							
FY17 Flight Test Core Support Contract Award									■																			
FY18 Flight Test Core Support Contract Award													■															
FY19 Flight Test Core Support Contract Award																	■											
FY20 Flight Test Core Support Contract Award																					■							
FY21 Flight Test Core Support Contract Award																									■			

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676021 / BASELINE SUPPORT
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mission Planning Release 4.4 (JMPS)	3	2017	3	2017
FY15 Flight Test Core Support Contract Award	1	2015	1	2015
FY16 Flight Test Core Support Contract Award	1	2016	1	2016
FY17 Flight Test Core Support Contract Award	1	2017	1	2017
FY18 Flight Test Core Support Contract Award	1	2018	1	2018
FY19 Flight Test Core Support Contract Award	1	2019	1	2019
FY20 Flight Test Core Support Contract Award	1	2020	1	2020
FY21 Flight Test Core Support Contract Award	1	2021	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS				Project (Number/Name) 676022 / AEHF Strategic Comm			
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
676022: AEHF Strategic Comm	0.000	0.000	0.000	62.586	0.000	62.586	165.141	245.728	205.641	93.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016 Project 675345, B-2 Modernization, includes new start effort for B-2 AEHF (strategic communication). Subsequent development efforts for B-2 AEHF are documented under BPAC 676022 AEHF Strategic Comm.

A. Mission Description and Budget Item Justification

The Advanced Extremely High Frequency (AEHF) Satellite Communications (SATCOM) system provides the only survivable, low probability of intercept/detection, high bandwidth system that ensures secure intra/inter-flight and two-way command and control communications in the modern anti-access/aerial denial battlespace. This communications upgrade replaces the Milstar/Ultra High Frequency (UHF) Satellite Communications (SATCOM) system (which is nearing system end of life) on the B-2.

The strategic communications effort will select, install, and integrate the radio, antenna and system components required to provide two-way EHF communication for the B-2.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: B-2 AEHF (Strategic Communication)	0.000	0.000	62.586	0.000	62.586
Description: B-2 AEHF (Strategic Communication) provides secure, strategic, two-way, survivable Anti-Access/Area Denial communications capability for conventional and nuclear missions.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A - The FY16 efforts for B-2 AEHF are documented under Project 675345 B-2 Modernization.					
FY 2017 Base Plans: Continue acquisition planning, technology maturation, affordability assessments, and other pre-Technology Maturation and Risk Reduction (TMRR) efforts in preparation for a Milestone A decision and entry into TMRR phase.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	62.586	0.000	62.586

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676022 / AEHF Strategic Comm
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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>
• APAF: BA05: Line Item #B00200: B-2 Squadrons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	121.026	209.295	330.321

Remarks

D. Acquisition Strategy

Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor (Northrop Grumman), leverage mature technology and system development investments by other Department of Defense organizations, encourage prime contractor to conduct competitions at the subsystem/key component level to reduce risk and cost, use cost plus incentive fee (CPIF) development contracts, and combine developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime, and differences in fielded configurations

E. 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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676022 / AEHF Strategic Comm
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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			
AEHF Strategic Comm	SS/CPIF	Northrop Grumman : Palmdale, CA	0.000	0.000		0.000		60.589	Jul 2017	0.000		60.589	Continuing	Continuing	-
Subtotal			0.000	0.000		0.000		60.589		0.000		60.589	-	-	-

Remarks
Northrop-Grumman is the prime contractor and lead integrator.

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			
Subtotal			-	-		-		-		-		-	-	-	-

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			
Subtotal			-	-		-		-		-		-	-	-	-

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			
PMA	Various	Various : TBD	0.000	0.000		0.000		1.997	Oct 2016	0.000		1.997	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		1.997		0.000		1.997	-	-	0.000

			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	0.000	0.000	62.586	0.000	62.586	-	-	-

Remarks
Award dates listed are the first incremental funding opportunity associated with each cost category.

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676022 / AEHF Strategic Comm
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	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
B-2 AEHF Materiel Development Decision (MDD)					■																							
B-2 AEHF Milestone A											■																	
B-2 AEHF TMRR Contract Award											■																	
B-2 AEHF TMRR											■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
B-2 AEHF Preliminary Design Review																												
B-2 AEHF Milestone B																												
B-2 AEHF EMD Contract Award																												

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101127F / B-2 SQUADRONS	Project (Number/Name) 676022 / AEHF Strategic Comm
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
B-2 AEHF Materiel Development Decision (MDD)	2	2016	2	2016
B-2 AEHF Milestone A	3	2017	3	2017
B-2 AEHF TMRR Contract Award	4	2017	4	2017
B-2 AEHF TMRR	4	2017	2	2020
B-2 AEHF Preliminary Design Review	2	2019	2	2019
B-2 AEHF Milestone B	2	2019	2	2019
B-2 AEHF EMD Contract Award	2	2019	2	2019

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