

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>May 2009</b>
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BUDGET ACTIVITY <b>05 System Development and Demonstration (SDD)</b>	PE NUMBER AND TITLE <b>0604226F B-1B</b>
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Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	180.434	142.643	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
4596 Conventional Mission Upgrades	180.434	142.643	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

FY08 funding totals includes \$36.8M supplemental funding  
 FY10, B-1B development efforts are transferring from PE 0604226F, Budget Program Activity Code (BPAC) 654596 to B-1B Squadrons, PE 0101126F, BPAC 675344. This transfers funds / efforts from Budget Activity (BA) 5 Demonstration / Validation to BA 7 Operations Systems Development.

**(U) A. Mission Description and Budget Item Justification**

This program provides RDT&E funding for the B-1B Conventional Mission Upgrade Program (CMUP). The CMUP program provides new and improved capabilities to the B-1B weapon system that require significant hardware and software development and testing. In addition, the CMUP program addresses reliability and diminishing manufacturing sources (DMS) deficiencies to prevent future grounding of aircraft.

B-1B grounding items are addressed in the following efforts: Gyro Stabilization System (GSS), onboard diagnostics Central Integrated Test System (CITS) upgrade, Vertical Situation Display (VSD) to replace unsupportable pilot displays, Radar Modernization Improvement Program (RMIP), and Inertial Navigation System (INS) upgrade.

B-1B improvement efforts include, but are not limited to, the development of the Fully Integrated Data Link (FIDL), ALQ-161A defensive system upgrades and a laptop controlled targeting pod (LCTP) capability. Also included is the development of an improved Threat Situational Awareness System (TSAS), and a Digital Communications Improvement (DCI) upgrade.

FIDL integrates Link-16 and Beyond Line of Sight (BLOS) data links along with upgraded displays for improved connectivity to command and control authorities and for enhancements to targeting and weapons management. The ALQ-161A defensive system upgrades include the Preprocessor Avionics Control Unit (PACU) software re-host/development. The LCTP effort provides a limited targeting pod capability to meet emerging warfighter needs and a Digital Data Recorder (DDR) to support Non-Traditional Intelligence, Surveillance and Reconnaissance (NTISR).

Upgrades to the B-1B training systems are included in CMUP to keep the training systems current with the aircraft configuration. In addition, program funds cover engineering/planning studies, related engineering efforts, and initiatives for future weapon system enhancements, including efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total ownership cost.

All B-1B development programs support planned requirements for unique identification in their production phases. The B-1B CMUP upgrade program is included in Budget Activity (BA) 5, System Development and Demonstration.

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(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Previous President's Budget	152.164	128.871	81.263
(U) Current PBR/President's Budget	180.434	142.643	0.000
(U) Total Adjustments	28.270	13.772	
(U) Congressional Program Reductions			
Congressional Rescissions		-0.388	
Congressional Increases	36.861	14.160	
Reprogrammings	-4.700		
SBIR/STTR Transfer	-3.891		

(U) **Significant Program Changes:**

FY08 increased for Congressional Supplemental of \$36.861M for GWOT.

FY09 increased \$10.0M (3010 to 3600 recolor), \$4.16M (16-Carry Congressional Add).

FY10/11, B-1B development efforts are transferring from PE 0604226F, Budget Program Activity Code (BPAC) 654596 to B-1B Squadrons, PE 0101126F, BPAC 675344.

This transfers funds / efforts from Budget Activity (BA) 5 Demonstration / Validation to BA 7 Operations Systems Development.

**Exhibit R-2a, RDT&E Project Justification**

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BUDGET ACTIVITY <b>05 System Development and Demonstration (SDD)</b>						PE NUMBER AND TITLE <b>0604226F B-1B</b>		PROJECT NUMBER AND TITLE <b>4596 Conventional Mission Upgrades</b>		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
4596 Conventional Mission Upgrades	180.434	142.643	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

**(U) A. Mission Description and Budget Item Justification**

This program provides RDT&E funding for the B-1B Conventional Mission Upgrade Program (CMUP). The CMUP program provides new and improved capabilities to the B-1B weapon system that require significant hardware and software development and testing. In addition, the CMUP program addresses reliability and diminishing manufacturing sources (DMS) deficiencies to prevent future grounding of aircraft.

B-1B grounding items are addressed in the following efforts: Gyro Stabilization System (GSS), onboard diagnostics Central Integrated Test System (CITS) upgrade, Vertical Situation Display (VSD) to replace unsupported pilot displays, Radar Modernization Improvement Program (RMIP), and Inertial Navigation System (INS) upgrade.

B-1B improvement efforts include, but are not limited to, the development of the Fully Integrated Data Link (FIDL), ALQ-161A defensive system upgrades and a laptop controlled targeting pod (LCTP) capability. Also included is the development of an improved Threat Situational Awareness System (TSAS), and a Digital Communications Improvement (DCI) upgrade.

FIDL integrates Link-16 and Beyond Line of Sight (BLOS) data links along with upgraded displays for improved connectivity to command and control authorities and for enhancements to targeting and weapons management. The ALQ-161A defensive system upgrades include the Preprocessor Avionics Control Unit (PACU) software re-host/development. The LCTP effort provides a limited targeting pod capability to meet emerging warfighter needs and a Digital Data Recorder (DDR) to support Non-Traditional Intelligence, Surveillance and Reconnaissance (NTISR).

Upgrades to the B-1B training systems are included in CMUP to keep the training systems current with the aircraft configuration. In addition, program funds cover engineering/planning studies, related engineering efforts, and initiatives for future weapon system enhancements, including efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total ownership cost.

All B-1B development programs support planned requirements for unique identification in their production phases. The B-1B CMUP upgrade program is included in Budget Activity (BA) 5, System Development and Demonstration.

**(U) B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Continued Conventional Mission Upgrade Program (CMUP) contractual efforts	172.552	133.645	0.000
(U) Government Flight Test, Live Fire Test & Evaluation and General Test Support	4.671	3.604	
(U) Continuing Mission Support	2.949	4.325	
(U) Modeling & Simulation / Studies & Analyses	0.262	1.069	
(U) Total Cost	180.434	142.643	0.000

## Exhibit R-2a, RDT&amp;E Project Justification

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PROJECT NUMBER AND TITLE

4596 Conventional Mission Upgrades

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

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) Appn 10, PE 0101126F, B-1B, Aircraft Procurement BP11, Mods	71.344	41.359								112.703
(U) Appn 10, PE 0101126F, B-1B, Aircraft Procurement BP16, Initial Spares	4.206	2.508								6.714
(U) Appn 10, PE 0101126F, B-1B, Aircraft Procurement BP12, Common Support Equipment	2.431	2.649								5.080
(U) Appn 28, PE 0207446F, Bomber TDL Core	37.714	11.603								49.317
(U) Appn 28, PE 0207423F, Advanced Communication Systems Related RDT&E: (U) Program Element 0205164F, Global Positioning System (GPS) (U) Program Element 0207325F, Joint Air to Surface Standoff Missile (JASSM) (U) Program Element 0208006F, Air Force Mission Planning Systems (AFMPS), Joint Mission Planning System (JMPS)	3.300									

(U) **D. Acquisition Strategy**

(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor (Boeing); installed performance responsibility; use of cost plus incentive fee (CPIF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.

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**Exhibit R-3, RDT&E Project Cost Analysis**

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<b>BUDGET ACTIVITY</b> <b>05 System Development and Demonstration (SDD)</b>	<b>PE NUMBER AND TITLE</b> <b>0604226F B-1B</b>	<b>PROJECT NUMBER AND TITLE</b> <b>4596 Conventional Mission Upgrades</b>
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<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
(U) Gyro Stabilization System (GSS)	SS/CPIF	Boeing, Long Beach, CA	21.085	2.822	Oct-07						23.907	
(U) Central Integrated Test System (CITS)	SS/CPIF	Boeing, Long Beach, CA	29.585	6.881	Feb-08	4.474	Oct-08				40.940	
(U) Vertical Situation Display (VSD)	SS/CPIF	Boeing, Long Beach CA	28.236	15.730	Nov-07	21.904	Nov-08				65.870	
(U) Radar Modernization Improvement Program (RMIP)	SS/CPIF	Boeing, Long Beach, CA	75.293	44.759	Jan-08	44.421	Oct-08				164.473	
(U) Inertial Navigation System (INS)	SS/CPIF	Boeing, Long Beach, CA	0.250	10.973	Jan-08	27.820	Nov-08				39.043	
(U) Fully Integrated Data Link (FIDL)	SS/CPIF	Boeing, Long Beach, CA	32.081	22.579	Nov-07	15.069	Nov-08				69.729	
(U) ALQ-161A Preprocessor Avionics Control Unit (PACU)	SS/CPFF	561st, Robins AFB, GA	29.793	8.525	Oct-07	7.340	Dec-08				45.658	
(U) ALQ-161A Digital Radio Frequency Memory (DRFM)	SS/CPFF	561st, Robins AFB, GA	22.797								22.797	
(U) Laptop Controlled Targeting Pod (LCTP)	SS/CPIF	Boeing, Long Beach, CA	25.087	34.119	Jul-08						59.206	
(U) Threat Situational Awareness System (TSAS)	SS/CPIF	Boeing, Long Beach, CA	6.206	13.972	Feb-08	8.417	Oct-08				28.595	
(U) Digital Communications Improvement (DCI)	SS/CPIF	Boeing, Long Beach, CA	2.889	1.224	Feb-08	0.040	Dec-08				4.153	
(U) 16-Carry	SS/CPIF	Boeing, Long Beach, CA		8.800	Apr-08	4.160	Sep-08				12.960	
(U) System Configuration	SS/CPIF	Boeing, Long Beach, CA		0.108	Apr-08						0.108	
(U) Tech Order Enhancement	SS/CPIF	Boeing, Long Beach, CA		1.500	Dec-07						1.500	
(U) JEFX 2008		OC-ALC, Tinker AFB, OK		0.500	Dec-07						0.500	
(U) Software support	SS/CPIF	Boeing, Long Beach, CA		0.060	May-08						0.060	
Subtotal Product Development			273.302	172.552		133.645		0.000		0.000	579.499	0.000
Remarks:												
(U) <u>Support</u>												
(U) A&AS	Various		3.962	2.949	Jan-08	4.325	Jan-09				11.236	
(U) Studies & Analyses / Modeling & Sim	C/FPIF	Rockwell Collins,	0.537	0.262	Jan-08	1.069	Jan-09				1.868	

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Exhibit R-3 (PE 0604226F)

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**Exhibit R-3, RDT&E Project Cost Analysis**

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BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE				
<b>05 System Development and Demonstration (SDD)</b>		<b>0604226F B-1B</b>				<b>4596 Conventional Mission Upgrades</b>				
	Sterling VA									
	Subtotal Support	4.499	3.211		5.394	0.000		0.000	13.104	0.000
	Remarks:									
(U)	<u>Test &amp; Evaluation</u>									
	(U) AFFTC P.O.	65.947	4.671	Dec-07	3.604	Dec-08			74.222	
	Subtotal Test & Evaluation	65.947	4.671		3.604	0.000		0.000	74.222	0.000
	Remarks:									
(U)	<u>Management</u>								0.000	
	Subtotal Management	0.000	0.000		0.000	0.000		0.000	0.000	0.000
	Remarks:									
(U)	Total Cost	343.748	180.434		142.643	0.000		0.000	666.825	0.000

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY  
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE  
0604226F B-1B

PROJECT NUMBER AND TITLE  
4596 Conventional Mission Upgrades

# Development Activity



CA - Contract Award  
 MS - Milestone  
 PDR - Preliminary Design Review  
 CDR - Critical Design Review  
 FRP DR - Full Rate Production Decision Review  
 HW - Hardware  
 LCTP - Laptop Controlled Targeting Pod  
 RAA - Required Assets Available  
 UNR - Urgent Need Request

△ Forecast Activity  
 ▲ Completed  
 RDT&E Funding  
 Grounding Item

20 Apr 09

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Exhibit R-4 (PE 0604226F)

**Exhibit R-4a, RDT&E Schedule Detail**

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BUDGET ACTIVITY

**05 System Development and Demonstration (SDD)**

PE NUMBER AND TITLE

**0604226F B-1B**

PROJECT NUMBER AND TITLE

**4596 Conventional Mission Upgrades**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) <b><u>Schedule Profile</u></b>			
(U) Gyro Stab Sys (GSS) -- MS C	2Q		
(U) Vertical Situation Displays (VSD) Upgrade -- CDR	1Q		
(U) RADAR Improvement Upgrade -- CDR	2Q		
(U) Inertial Nav Sys (INS) -- MS B	2Q		
(U) Inertial Nav Sys (INS) -- PDR		1Q	
(U) Inertial Nav Sys (INS) -- CDR		2Q	
(U) ALQ-161A Preprocessor Avionics Control Unit (PACU) Software Migration - CDR		1Q	
(U) Laptop Controlled Targeting Pod (LCTP) -- RAA	4Q		