

**UNCLASSIFIED**

PE NUMBER: 0101113F  
 PE TITLE: B-52 SQUADRONS

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>May 2009</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0101113F B-52 SQUADRONS</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	51.336	38.546	93.930	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5039 B-52 Modernization	51.336	38.546	93.930	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

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

B-52 Modernization is a comprehensive program to assure B-52 viability to perform future wartime missions. B-52 modernization (initiated in FY05) integrates and adds both tactical and global data link communications for real time command and control, targeting, intelligence and upgrades antiquated air traffic management systems with those supported by three key functions using satellite technology: Communications, Navigation and Surveillance. Modernization also upgrades training devices to support aircrew and maintenance training with the latest B-52 capability. In addition, modernization improves conventional warfare capability with additional MIL-STD-1760 smart weapons and fully integrates advanced targeting pods with the offensive avionics system.

**CONNECT**

The B-52 Combat Network Communication Technology (CONNECT) acquisition program will support nuclear and conventional operations by upgrading the B-52 fleet with tactical data link and voice communications capabilities along with improved threat and situational awareness to support participation in network centric operations. The CONNECT upgrade includes new Multi-Functional Color Displays (MFCDs) and a digital interphone system which will survive and function through the nuclear environment to enhance crew interaction and situational awareness. To enable net centric operations, the CONNECT upgrade integrates: on-board client/server architecture supporting distributed processing with independent control functions; UHF Beyond Line-Of-Sight (BLOS) Joint Range Extension (JRE) capability via ARC-210 Warrior radio to exchange J-Series messaging within theater; Intelligence Broadcast Receiver; limited Internet Protocol (IP)-based UHF BLOS link supporting email and file transfers; and Improved Data Modem (IDM)-based digital Variable Message Format (VMF) datalink to significantly enhance close air support (CAS) missions. This integrated suite will provide the B-52 fleet with a machine-to-machine capability supporting aircraft re-tasking and re-targeting of Conventional Air Launched Cruise Missile (CALCM) and J-series weapons across the range of military operations the B-52 is assigned.

**B-52 EHF**

B-52 EHF will provide the B-52 fleet with assured and survivable two-way Extremely High Frequency (EHF) SATCOM link for emergency action messages (EAMs) and report-backs to meet Joint Chiefs of Staff (JCS) nuclear protected Information Exchange Requirements (IER). B-52 EHF will integrate the Family of Advanced Beyond Line of Sight (BLOS) Terminals (FAB-T) Increment 1 system developed and procured by Electronic Systems Center (ESC) through PE 0303601F. The FAB-T system consists of the Operator Interface Group, Modem Processor Group, Antenna Group, and Radome. B-52 EHF will integrate the following capabilities into CONNECT: a high data rate BLOS communication link supporting IP-based Global Information Grid (GIG) interoperability; two additional Multi-Functional Color Displays (MFCDs) which will survive and function through the nuclear environment; automated reporting of aircraft fuel level status off-board the jet; additional J-series messages; and additional software for integration.

**Trainers & CONNECT**

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In order to maintain currency with the latest aircraft configuration, the CONECT and EHF programs will update existing trainers or use computer-based training to add CONECT and EHF functionality to meet user-training requirements, and establish a system integration laboratory for updates of the Weapon System Trainers.

## Weapons Improvements

B-52 Modernization also includes improvement of conventional warfare capability. This effort provides development and testing to rapidly integrate weapons with a large array of properties, but not limited to: stealth, hard target penetration, standoff, adverse weather, precision strike, loiter, decoy, defense suppression, post-release/launch re-target capability, area denial, mobile targets, and multiple simultaneous attack. These capabilities are provided through the integration of advanced weapons both internally (MIL-STD-1760 in the bomb bay) and externally.

## Advanced Targeting Pod Functionality

The B-52 Modernization program fully integrates the Advanced Targeting Pod (ATP) by linking pod control, display and target geo-location with the B-52 offensive avionics system. The B-52 ATP effort continues the ATP (Sniper or LITENING) integration effort which began in FY07 with GWOT funding. The ATP effort develops aircraft software updates to add and incorporate advanced pod functionality into the B-52. In addition, this effort upgrades the software functions of the Alternate Mission Equipment (AME) (Multi Function Display and the Integrated Hand Controller), and enables the B-52 to utilize a LITENING, or Sniper pod. This effort provides hardware and software upgrades to the existing aircrew/maintenance trainers and the system integration lab.

## B-52 Communication Navigation Surveillance/Air Traffic Management (CNS/ATM)

The Communication Navigation Surveillance/Air Traffic Management effort, will develop and integrate modern technology into the B-52 to enable it to operate in the evolving air traffic environment. This effort is driven by the International Civil Aviation Organization (ICAO) and Federal Aviation Administration (FAA) mandates to comply with performance standards to allow the B-52 to operate safely in controlled airspaces. This program will also yield significant savings through more efficient flight routes and altitudes. Functions requiring updated technology in the B-52 are communications, navigation, and surveillance. More specifically the capabilities upgraded under CNS/ATM activities will include FM Immunity, Digital Communications (voice to data), improved navigation accuracy such as Required Navigation Performance (RNP) or Global Positioning System (GPS) enhancements, Reduced Vertical Separation Minimum (RVSM), Traffic Alert and Collision Avoidance System (TCAS), enhanced situational awareness such as Mode S/Mode 5 Identify Friend or Foe (IFF), Communications Management Unit, HF Data Link, 8.33MHz VHF, Auto Dependent Surveillance (both address and broadcast), and any follow-on activities to associated components/systems resulting from modifications to CNS/ATM systems.

## Replace B-52 Anti-Skid

The B-52 Anti-Skid is a system used to maintain control of aircraft during landings and taxi operations. Anti-skid automatically activates the brake system without crew input to insure safe operation of aircraft on the ground. Aircraft not equipped with anti-skid capabilities require special procedures not conducive to normal operations and face increased risk of damage during taxi, landings and emergency stops. Ogden Air Logistics Center (OO-ALC) has identified the Anti-Skid skid detector as a Diminishing Manufacturing Sources (DMS) item that will need to be replaced beginning in FY11. The Anti-Skid is a joint effort between OO-ALC and Oklahoma City Air Logistics Center (OC-ALC). This effort covers costs associated with the Group A and Group B hardware Development, flight test costs, and

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installation of the system to include upgrade of the maintenance trainers.

#### Strategic Radar Replacement

The Strategic Radar Replacement Program replaces the current B-52 Strategic Radar which was installed in the 1980s and is estimated to be unsupportable by 2016. Although this system has been modified several times since 1980, it has never been totally replaced. Several parts of the system remain from the original design such as the antenna reflector, feed, and casting. The system is showing increasing signs of performance degradation, reliability and maintainability issues, and design limitations. This radar replacement program is a Reliability & Maintainability (R&M) modification which will take advantage of technical insertion to capture the advanced capabilities of Non-Developmental Item (NDI) radars, maximizing commonality with other platforms. There have been significant advances in radar technology over the past 20 years and it is no longer reasonable to update the existing hardware. The current radar system uses a mechanically scanned antenna. Current radar technology involves electronically scanned arrays with greatly increased performance and reliability. The Strategic Radar Replacement Program will develop, integrate, test, and field a modern radar system.

#### Test & Evaluation

B-52 Modernization funds test activities at the Air Force Flight Test Center (AFFTC), engineering and planning studies for potential future weapon system enhancements (weapons, sensors, and avionics), upgrades to the B-52 System Integration Laboratory (SIL) and weapon system operational/safety, supportability, reliability, and Total Ownership Cost (TOC) improvements.

#### Additional Efforts

B-52 Modernization funds additional efforts that stem from the operation and maintenance of a 48 year-old aircraft, such as parts obsolescence and Diminishing Manufacturing Sources (DMS). Examples include, but are not limited to upgrades to outdated avionics computers, mission planning interface to the Air Force Mission Support System (AFMSS) and upgrades to the Electronic Countermeasures (ECM) suite, and studies and analysis.

All B-52 development programs support planned requirements for unique identification in their production phases. The B-52 Modernization upgrade program is included in Budget Activity (BA) 7, Operational System Development.

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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	42.121	38.651	68.381
(U) Current PBR/President's Budget	51.336	38.546	93.930
(U) Total Adjustments	9.215	-0.105	
(U) Congressional Program Reductions			
Congressional Rescissions		-0.105	
Congressional Increases			
Reprogrammings	10.363		
SBIR/STTR Transfer	-1.148		

(U) **Significant Program Changes:**

FY08 - Increase of \$9.215M reprogramming for B-52 CONECT efforts.

FY10 - Increase of \$25.6M for B-52 CONECT development (+\$17.3), B-52 Anti-Skid replacement program (+\$.8M), Advanced Targeting Pod program (+\$3.7M), Strategic Radar Replacement program (+\$12.4M) and a one-year slip to the Mode S/5 program (-\$8.6M).

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BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
<b>07 Operational System Development</b>				<b>0101113F B-52 SQUADRONS</b>				<b>5039 B-52 Modernization</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	
5039 B-52 Modernization	51.336	38.546	93.930	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			

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Strategic Radar Replacement

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All B-52 development programs support planned requirements for unique identification in their production phases. The B-52 Modernization upgrade program is included in Budget Activity (BA) 7, Operational System Development.

(U) <b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Common Reconfigurable Advanced Thermal Management System	0.482		
(U) Advanced Targeting Pod Functions	0.980	3.459	3.685
(U) Pod Software Trainer Upgrades	4.000		
(U) Advanced Targeting Pod Flight Test	0.120		
(U) Advanced Targeting Pod Management Support	0.100		
(U) CONECT Product Development	39.855	18.232	20.074
(U) CONECT/EHF Simulation/Trainer Development	0.510	3.572	24.830
(U) CONECT Government Test	1.600	3.639	3.133
(U) CONECT/EHF Program Support/Modeling and Simulation/Studies and Analysis	1.339	1.053	1.126
(U) CONECT/EHF Program Management Support	2.350	5.591	5.954

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<b>(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) EHF Product Development		3.000	21.908
(U) Replace B-52 Anti-Skid			0.795
(U) Strategic Radar Replacement			12.425
(U) Total Cost	51.336	38.546	93.930

<b>(U) <u>C. Other Program Funding Summary (\$ in Millions)</u></b>	<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) APAF, PE 0101113F, B52 Squadrons, Aircraft Procurement BP11, Mods	42.645	41.581	78.788						Continuing	TBD
(U) APAF, PE 0101113F, B52 Squadrons, Aircraft Procurement BP16, Initial Spares	0.039	0.063	8.487						Continuing	TBD

**(U) D. Acquisition Strategy**  
 B-52 Modernization is a comprehensive program to assure B-52 viability to perform future wartime missions. The B-52 CONECT EMD prime contract is sole source to Boeing, Wichita, KS. Boeing will design, develop, test and procure the necessary equipment from their subcontractors; develop engineering drawings, logistic and technical data, and time compliance technical order (TCTO) for installation on the B-52. The EMD effort includes installing and testing CONECT equipment on a B-52 aircraft. The B-52 trainer will be modified to support the CONECT modification through OO-ALC via their trainer contract with Rockwell Collins, Sterling, VA.

The B-52 EHF EMD prime contract is sole source to Boeing, Wichita, KS. Boeing will integrate the Government Furnished Equipment (GFE) Family of Beyond-Line-Of-Sight Terminals (FAB-T); develop engineering drawings, logistic and technical data, and time compliance technical order (TCTO) for installation on the B-52. The EMD effort includes installing and testing EHF equipment on a B-52 aircraft. The B-52 trainer will be modified to support the EHF modification through OO-ALC via their trainer contract with Rockwell Collins, Sterling, VA.

The B-52 Advanced Targeting Pod (ATP) Program managed by the the B-52 System Program Office (SPO) sole sourced the software development contract to Boeing, Wichita. The ATP trainer development contract will be awarded by OO-ALC via their trainer contract with Rockwell Collins, Sterling VA.

The B-52 Anti-Skid program is a joint effort between OC-ALC and OO-ALC. The modification will be implemented via Program Depot Maintenance and Contract Field Team.

The Strategic Radar Replacement program is planned to be a sole-source contract to Boeing, Wichita KS.

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

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<b>07 Operational System Development</b>				<b>0101113F B-52 SQUADRONS</b>					<b>5039 B-52 Modernization</b>			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) <u>Product Development</u>												
CONECT EMD	CPFF	Boeing, Wichita KS	64.920	39.855		18.232		20.074		Continuing	TBD	
B-52 EHF EMD	TBD	Boeing, Wichita KS				3.000		21.908		Continuing	TBD	
1760 Studies and Analysis	T&M	Boeing, Wichita KS									0.000	
Advanced Pod Functions	Various	Boeing, Wichita KS	0.000	0.980	Sep-08			3.685			4.665	
Common Reconfigurable Advanced Thermal Management System	MIPR	ISR (SprayCool Technology) and Wichita State University, Wichita KS	1.000	0.482							1.482	
B-52 Communication Navigation/Surveillance/Air Traffic Management	Engineering Assignment T&M	Boeing, Wichita KS								Continuing	TBD	
Strategic Radar Replacement	TBD	TBD						12.208	Jan-10		12.208	
Subtotal Product Development			65.920	41.317		21.232		57.875		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u>												
CONECT Simulator/Trainer	616	509 ACSS, OO-ALC, UT	18.810	0.510		3.572		19.118		Continuing	TBD	
B-52 EHF Simulator/Trainer	616	509 ACSS, OO-ALC, UT						1.612		Continuing	TBD	
B-52 EHF Satellite Simulator - Lincoln Labs (FFRDC)								4.000			4.000	
CONECT Program Support, Studies & Analysis	Various		2.039	1.339		1.093		1.126		Continuing	TBD	
B-52 EHF Program Support, Studies & Analysis	Various							0.100		Continuing	TBD	
Pod Software Trainer Upgrades	Contract	OO-ALC	0.000	4.000	Nov-08						4.000	
Strategic Radar Replacement	TBD	TBD									0.000	
Subtotal Support			20.849	5.849		4.665		25.956		Continuing	TBD	0.000
Remarks:												
(U) <u>Test &amp; Evaluation</u>												
CONECT 419 FLTS	Project Order	Edwards AFB, CA	2.188	1.300		3.274				Continuing	TBD	
B-52 EHF 419 FLTS	Project Order	Edwards AFB, CA						3.092		Continuing	TBD	

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Exhibit R-3 (PE 0101113F)

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

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CONECT JTIC	MIPR	Fort Huachuca, AZ	0.384	0.300	0.365			Continuing	TBD		
B-52 EHF JTIC	MIPR	Fort Huachuca, AZ					0.041	Continuing	TBD		
Advanced Pod Test 419 FLTS	Project Order	Edwards AFB, CA		0.120	Feb-08	3.459	Dec-09			3.579	
Subtotal Test & Evaluation			2.572	1.720		7.098		3.133	Continuing	TBD	0.000
Remarks:											
(U) <u>Management</u>											
CONECT 651 AESS		Wright-Patters on AFB, OH	2.205	1.412		4.525		3.136	Continuing	TBD	
B-52 EHF 651 AESS		Wright-Patters on AFB, OH						2.023	Continuing	TBD	
CONECT 327 ACSG		Tinker AFB, OK	0.758	0.938		1.026			Continuing	TBD	
B-52 EHF 327 ACSG		Tinker AFB, OK						0.795	Continuing	TBD	
ATP Management Support				0.100						0.100	
Strategic Radar Replacement		Tinker AFB, OK						0.217		0.217	
Anti-Skid Replacement								0.795		0.795	
Subtotal Management			2.963	2.450		5.551		6.966	Continuing	TBD	0.000
Remarks:											
(U) Total Cost			92.304	51.336		38.546		93.930	Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY  
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PROJECT NUMBER AND TITLE  
5039 B-52 Modernization



U.S. AIR FORCE

# B-52H Modernization Schedule FY10PB

	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
<b>ATP Integration</b>	S/W Integration Only							
<b>Strat Radar Replacement (SR2)</b>								
<b>Anti-Skid Replacement</b>								
<b>CONECT</b>								
<b>B-52 EHF</b>								



*Integrity - Service - Excellence*

Exhibit R-4a, RDT&E Schedule Detail

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(U) <u>Schedule Profile</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) CONECT EMD	1-4Q	1-4Q	1-4Q
(U) CONECT Flight Test Drop C		4Q	1Q
(U) CONECT LRIP Milestone C			3Q
(U) B-52 EHF EMD Increment 1		3-4Q	1-2Q
(U) B-52 EHF EMD Increment 2			2-4Q
(U) Anti-Skid EMD			2-4Q
(U) Anti-Skid Flight Test			4Q
(U) Strategic Radar Replacement EMD			2-4Q