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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	74.550	111.910	280.414	0.000	280.414	529.772	560.381	408.331	319.518	Continuing	Continuing
675039: B-52 System Improvements	-	0.000	10.050	41.230	0.000	41.230	49.597	44.892	4.319	4.320	Continuing	Continuing
675041: Bomber Tactical Data Link	-	10.397	8.167	30.977	0.000	30.977	36.069	44.376	26.617	13.982	Continuing	Continuing
675048: 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)	-	28.870	15.164	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
675050: CONECT	-	13.189	7.043	11.138	0.000	11.138	0.001	0.000	0.003	0.002	Continuing	Continuing
675055: GPS-IU	-	9.525	18.767	37.030	0.000	37.030	1.985	0.000	0.000	0.000	Continuing	Continuing
675056: B-52 Radar Modernization Program (RMP)	-	4.637	15.226	56.864	0.000	56.864	119.005	154.870	179.148	177.356	Continuing	Continuing
675057: B-52 Low Cost Improvement (LCI)	-	0.000	2.682	2.605	0.000	2.605	2.607	2.605	2.660	2.710	Continuing	Continuing
675058: B-52 Weapon Sys Trainer Air Ref Training Upgrade	-	4.702	13.240	0.000	0.000	0.000	7.858	0.000	0.000	0.000	Continuing	Continuing
675129: B-52 Re-Engining	-	0.000	0.000	64.515	0.000	64.515	312.650	313.638	195.584	121.148	Continuing	Continuing
675160: B-52 Crypto Modernization	-	3.230	11.919	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
676039: B-52 Airspace Compliance	-	0.000	9.652	36.055	0.000	36.055	0.000	0.000	0.000	0.000	Continuing	Continuing
Note This program, BA 7, PE 0101113F, project 671803, B-52 AFMC Test Aircraft Asset Support, is a new start. This program, BA 7, PE 0101113F, project 671805, B-52 VLF/LF, is a new start. This program, BA 7, PE 0101113F, project 671807, B-52 Advanced Target Pod Multi-Functional Color Display, is a new start. This program, BA 7, PE 0101113F, project 671810, B-52 AEHF Integration, is a new start. This program, BA 7, PE 0101113F, project 675039, AFMC Test Assets, is a new start. This program, BA 7, PE 0101113F, project 675039, B-52 VLF/LF Modernization, is a new start. This program, BA 7, PE 0101113F, project 675039, Advanced Target POD MFCD, is a new start.												

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<p>This program, BA 7, PE 0101113F, project 675041, B-52 Advanced Extremely High Frequency (AEHF) Integration, is a new start.</p> <p>This program, BA 7, PE 0101113F, project 675129, B-52 Re-Engining, is a new start.</p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>B-52 SYSTEM IMPROVEMENTS (BPAC 675039)</p> <p>The B-52 System Improvements is a comprehensive project to facilitate future capabilities and ensure the B-52's viability in performing current and future wartime missions. The scope of work may include studies and analyses to include development Analyses of Alternatives (AoA), Capability Development Documents (CDD), and/or any other analysis or documentation necessary to establish a Program of Record (POR). Additionally, this project may include airborne integration experiments or demonstrations of emerging technologies.</p> <p>Trainers and Upgrades for B-52 Systems Improvements</p> <p>In order to maintain currency with the latest aircraft configuration, the B-52 Systems Improvements projects will update existing trainers or use Computer-Based Training (CBT) to add any new systems improvement functionality to meet user training requirements and update/maintain the Systems Integration Lab (SIL) for the Weapon System Trainers (WSTs).</p> <p>MAJOR THRUSTS</p> <p>B-52 AFMC TEST ASSETS (future BPAC 671803)</p> <p>The B-52 Test Support project will provide funding for the test aircraft, manpower, and facilities at the Air Force Test Center located at Edwards AFB, California. This project will support the developmental testing and sustainment needs of the B-52 weapon system.</p> <p>B-52 VLF/LF Modernization (future BPAC 671805)</p> <p>The B-52 VLF/LF Modernization integrates a receive-only, low frequency receiver and antenna subsystem to provide secure, survivable strategic nuclear communication capability for the B-52. This project will consist of integrating an existing VLF/LF Modernization terminal into the B-52. Integration includes Group A wiring, rack and antenna, and the Group B terminal Line Replaceable Unit (LRU). Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. As the VLF/LF Modernization provides future communication growth to the B-52, emerging security/certification requirements (nuclear certification, cyber security, program protection, crypto modernization, etc.) as well as other aircraft upgrades (Link 16, EHF, 1760 IWBW, Mode S/Mode 5, IFF, BSB, Re-Engine, etc.) may require studies and/or support for potential impact to VLF/LF Modernization. Funds may be used to procure, test, and field terminals. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative. Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.</p> <p>Trainers and Upgrades for B-52 VLF/LF Modernization</p>		

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<p>In order to maintain currency with the latest aircraft configuration, the B-52 Systems Improvements projects will update existing trainers or use Computer-Based Training (CBT) to add any new systems improvement functionality to meet user training requirements and update/maintain the Systems Integration Lab (SIL) for the Weapon System Trainers (WSTs).</p> <p>B-52 ADVANCED TARGET POD-MULTI FUNCTION COLOR DISPLAY (future BPAC 671807)</p> <p>The B-52 Advanced Targeting Pod Multi-Function Color Display (ATP-MFCD) project consists of a monitor upgrade with a 10 gigabyte Ethernet connection. The current targeting pod is outdated and experiencing a historic break rate. Additionally, the current monitor does not support current and emerging video resolution improvements of the fielded Sniper and LITENING ATPs. The B-52's ATP is now capable of transmitting HD color and video at a much higher resolution than the current monochrome monitor; this upgrade will improve combat lethality and situational awareness.</p> <p>Trainers and Upgrades for B-52 Advanced Target Pod Multi Function Color Display</p> <p>In order to maintain currency with the latest aircraft configuration, the B-52 Systems Improvements projects will update existing trainers or use Computer-Based Training (CBT) to add any new systems improvement functionality to meet user training requirements and update/maintain the Systems Integration Lab (SIL) for the Weapon System Trainers (WSTs).</p> <p>BOMBER TACTICAL DATA LINK (TDL) (BPAC 675041)</p> <p>The Bomber Tactical Data Link (TDL), also known as B-52 Link 16, provides low latency, jam-resistant situation awareness and the Command and Control (C2) communications needed to support in-theater operations and missions. This project will consist of integrating an existing Commercial Off-the-Shelf (COTS) Link 16 terminal into the B-52. Integration includes Group A wiring, rack and antenna modification, and the incorporation of the Group B terminal Line Replaceable Unit (LRU). The TDL terminal will be fully integrated with Combat Network Communications Technology (CONNECT). This Line-Of-Sight (LOS) Link 16 capability allows the warfighter to maintain situational awareness, avoid threats, and most efficiently employ an array of weapons.</p> <p>Trainers and Upgrades for Bomber TDL</p> <p>In order to maintain currency with the latest aircraft configuration, the Bomber TDL project will update existing trainers or use CBT to add TDL functionality to meet user training requirements and update/maintain the SIL for the WSTs.</p> <p>B-52 ADVANCED EXTREMELY HIGH FREQUENCY (AEHF) INTEGRATION</p> <p>The B-52 Advance Extremely High Frequency (AEHF) Integration SATCOM system provides a 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 non-survivable Military Strategic and Tactical Relay (MILSTAR) Ultra High Frequency (UHF) SATCOM capability (MILSTAR is nearing system end of life) on the B-52.</p> <p>The AEHF Integration effort will integrate the terminal, antenna and system components required to provide two-way EHF communication for the B-52.</p>		

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<p>Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. As AEHF Integration provides future communication growth to the B-52, emerging security/certification requirements (nuclear certification, cyber security, program protection, crypto modernization, etc.) as well as other aircraft upgrades (Link 16, CVR, 1760 IWBU, Mode S/Mode 5, IFF, BSB, Re-Engine, etc.) may require studies and/or support for potential impact to AEHF. Funds may be used to procure, test, and field terminals and other system components.</p> <p>DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative. Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.</p> <p>Trainers and Upgrades for B-52 ADVANCED EXTREMELY HIGH FREQUENCY</p> <p>In order to maintain currency with the latest aircraft configuration, the B-52 Systems Improvements projects will update existing trainers or use Computer-Based Training (CBT) to add any new systems improvement functionality to meet user training requirements and update/maintain the Systems Integration Lab (SIL) for the Weapon System Trainers (WSTs).</p> <p>B-52 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)</p> <p>The B-52 1760 Internal Weapons Bay Upgrade (IWBU) integrates MIL-STD 1760 weapons capability onto the B-52. This project utilizes 44 Common Strategic Rotary Launchers (CSRLs) converted into Conventional Rotary Launchers (CRLs), where three of the CRLs will be modified under Engineering and Manufacturing Development (EMD) for test purposes thus resulting in a production quantity of 41 CRLs. Increment 1.1 develops capability for internal carriage of eight Joint Direct Attack Munitions (JDAM) and variants, to include Laser JDAM (LJDAM), on a rotary launcher. Additionally, this increment develops the capability for external carriage for 16 LJDAM. Increment 1.2 develops the capability for internal carriage of eight Joint Air-to-Surface Standoff Missiles (JASSM) and its variants, to include JASSM-Extended Range (JASSM-ER), or eight Miniature Air Launched Decoys (MALD) and its variants, to include MALD Jammer (MALD-J). This increment also develops the capability for external carriage for 12 JASSM-ER. This requirement's CDD was validated by the Air Force Requirements Oversight Council (AFROC) in June 2013.</p> <p>Trainers and Upgrades for B-52 1760 IWBU</p> <p>In order to maintain currency with the latest aircraft configuration, the B-52 1760 IWBU project will update existing trainers or use CBT to add MIL-STD 1760 IWBU functionality to meet user training requirements and update/maintain the SIL for the WSTs.</p> <p>B-52 COMBAT NETWORK COMMUNICATIONS TECHNOLOGY (CONECT)</p> <p>The B-52 CONECT project supports nuclear and conventional operations by upgrading the B-52 fleet with data and voice communications capabilities along with improved threat awareness and situational awareness to support participation in net-centric operations. The CONECT upgrade includes new Multi-Functional Color Displays (MFCDs) and a digital interphone system; both of which will survive and function through the nuclear environment to enhance crew interaction and situational awareness. In order to enable net-centric operations, the CONECT upgrade integrates the following systems: 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 (for exchanging J-Series messaging within theater); Intelligence Broadcast Receiver (IBR); limited Internet Protocol (IP)-based UHF BLOS link (to support voice, e-mail, and file transfers); and an Improved Data Modem (IDM)-based digital Variable Message Format (VMF) datalink to significantly enhance Close Air Support (CAS) missions. This integrated</p>		

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suite will provide the B-52 fleet with a machine-to-machine data transfer capability supporting aircraft re-tasking and retargeting of Conventional Air-Launched Cruise Missile (CALCM) and J-series weapons across the range of B-52 military operations and missions. This requirement's Capability Production Document (CPD) was validated by the Air Force Requirements Oversight Council (AFROC) on 16 September 2008.		
Trainers and Upgrades for B-52 CONECT In order to maintain currency with the latest aircraft configuration, the B-52 CONECT project will update existing trainers or use CBT to add CONECT functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
GLOBAL POSITIONING SYSTEM (GPS) INTERFACE UNIT (IU) (GPS-IU) REPLACEMENT The Global Positioning System (GPS) Interface Unit (IU) Replacement project will replace three Circuit Card Assemblies (CCAs) in the GPS-IU as well as the backplane (to integrate the new and old CCAs); the Central Processing Unit (CPU)/1553, the power supply CCA, and the video graphics card.		
Trainers and Upgrades for GPS-IU Replacement In order to maintain currency with the latest aircraft configuration, the GPS-IU Replacement project will update existing trainers or use CBT to add GPS-IU functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
RADAR MODERNIZATION PROGRAM (RMP) The RMP will support nuclear and conventional operations by replacing the current APQ-166 radar on the B-52H aircraft. The APQ-166 is increasingly difficult to support due to Diminished Manufacturing Sources (DMS) and obsolescent technologies; the average reliability rate places long-duration missions at risk. This modernization program will encompass the radar antenna array and up to 14 individual LRUs that comprise the entire B-52 radar system. Development and production of new systems to replace the legacy equipment will be installed on all 76 B-52H aircraft. The RMP will take advantage of advances in technology and on-going development efforts to acquire, to the maximum extent possible, COTS components and integrate them into the B-52. The use of new technology will increase reliability of the radar system while also allowing the operational command to fully utilize the capabilities of the B-52H aircraft to employ an array of weapons, perform mission-essential navigation, and conduct weather avoidance functions.		
Trainers and Upgrades for RMP In order to maintain currency with the latest aircraft configuration, the RMP will update existing trainers or use CBT to add modernized radar functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
LOW COST IMPROVEMENTS The Low Cost Improvements BPAC will facilitate future B-52 capabilities. The scope of work may involve, but is not limited to the following systems/functions: avionics, navigation, Situational Awareness (SA), weapons/targeting pod integration, communications, flight systems, nuclear systems, and electronic flight bags. Additionally, this project will develop and integrate emerging technologies for specialized B-52 missions to include Intelligence, Surveillance, and Reconnaissance (ISR), targeting, and weapons employment. Continuing work related to the Mission Data Recorder will make the T-1 modification a permanent modification to the platform.		

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Trainers and Upgrades for Low Cost Improvements In order to maintain currency with the latest aircraft configuration, this project will update existing trainers or use CBT to add low cost, improved functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
B-52 WEAPON SYSTEMS TRAINER (WST) AIR REFUELING TRAINER UPGRADE The Weapon Systems Trainer (WST) Air Refueling Trainer upgrade enhances the principal mission of the B-52 Training Systems program by ensuring high-fidelity simulators and training systems are available for aircrew members to support credible training, maintain proficiencies, and increase skill levels. B-52 Aircrew Training Devices simulate the necessary visual, motion, and audible cues to provide effective ground training for aircrew members. The B-52 WST Air Refueling Upgrade is a comprehensive project that will aid B-52 aircrew in accomplishing credible air refueling training in the simulator, which in turn will minimize the requirement for on-aircraft air refueling training. To facilitate this capability, the scope of work will involve development of an AoA, studies and analysis, a CDD, or any other analysis or documentation necessary to support the POR. This upgrade will also implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.		
B-52 RE-ENGINEING The B-52 Re-Engine Program (REP) supports nuclear and conventional operations by replacing the current TF33-PW-103 engine on the B-52H aircraft. The TF33-PW-103 engine is increasingly difficult to sustain due to diminished manufacturing sources and obsolescent technologies; the AF Propulsion Directorate projects the engine will become unsustainable by 2030. This sustainment program will replace the current TF33-PW-103 engine with jet engines of similar size, weight, and thrust characteristics. The development, production and installation of new engines and related subsystems will replace the legacy equipment on all 76 B-52H aircraft. As the REP brings additional capability to the B-52, emerging security/certification requirements (nuclear hardening, cyber security, program protection, etc.) will also need to be addressed. Several concurrent aircraft upgrades during the REP may necessitate studies be performed during the program to determine optimal engine installation and deployment options.		
Trainers and Upgrades for B-52 Re-Engining In order to maintain currency with the latest aircraft configuration, the B-52 Re-Engining project will update existing trainers or use CBT to add modernized re-engining capabilities/functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
B-52 CRYPTO MODERNIZATION The B-52 Crypto Modernization project will upgrade the B-52 with Mobile User Objective System (MUOS)-capable ARC-210 radio systems to prevent loss of BLOS voice and data communications capability.		
Trainers and Upgrades for Crypto Modernization In order to maintain currency with the latest aircraft configuration, the B-52 Cryto Modernization project will update existing trainers or use CBT to add Cryto Modernization functionality to meet user training requirements and update/maintain the SIL for the WSTs.		
B-52 AIRSPACE COMPLIANCE		

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The B-52 Airspace Compliance project will upgrade the Communication, Navigation and Surveillance and Air Traffic Management (CNS/ATM) systems to meet FAA mandates. Additionally, the Automatic Dependent Surveillance-Broadcast (ADS-B) upgrade will be accomplished to meet FAA requirements for FY20.						
Trainers and Upgrades for B-52 Airspace Compliance In order to maintain currency with the latest aircraft configuration, the B-52 Airspace Compliance project will update existing trainers or use CBT to add increased functionality to meet user training requirements and update/maintain the SIL for the WSTs. Funds may be used to resolve emerging safety of flight and DMS issues, accommodate technology insertion, and fulfill FAA (or other) mandates necessary to ensure continued aircrew safety and mission effectiveness and to accommodate the FAA mandate for ADS-B as outlined throughout previous AF and DoD budget exhibits.						
This Program Element (PE) may include any necessary civilian pay expenses required to manage, execute, and deliver B-52 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.						
BA 7- This project is in Budget Activity 7, Operational System Development because this budget activity includes development 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.						
This project is in Budget Activity (BA) 7 (Operational System Development) because this BA includes development 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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		88.267	111.910	130.323	0.000	130.323
Current President's Budget		74.550	111.910	280.414	0.000	280.414
Total Adjustments		-13.717	0.000	150.091	0.000	150.091
• 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		-0.760	0.000			
• SBIR/STTR Transfer		-2.957	0.000			
• Other Adjustments		-10.000	0.000	150.091	0.000	150.091
Change Summary Explanation						
FY17: Decrease of \$13.717M consists of: -\$10M reduction for re-engine (Request of Additional Appropriations not fulfilled), -\$2.96M for SBIR, and -0.76M for BTR to B-1.						

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FY19: Increase of \$150.1M consists of four new start programs: AFMC Test Assets \$17.9M, Advanced Targeting POD Multi-Function Color Display \$1.59M, VLF/LF Modernization \$22.00M, and AEHF Integration \$13.55M; funding additions to: Re-Engine \$65M, GPS-IU \$28M, Tactical Data Link \$12.078M; funding decreases to WST AR Trainer upgrade \$7.917M (moved to FY20) and overall inflation adjustment \$2.11M.		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675039: B-52 System Improvements	-	0.000	10.050	41.230	0.000	41.230	49.597	44.892	4.319	4.320	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0101113F, project 675039, AFMC Test Assets, is a new start.
This program, BA 7, PE 0101113F, project 675039, B-52 VLF/LF Modernization, is a new start.
This program, BA 7, PE 0101113F, project 675039, Advanced Target POD MFCD, is a new start.

A. Mission Description and Budget Item Justification

B-52 System Improvements

B-52 System Improvements is a comprehensive project to facilitate future capabilities and ensure the B-52's viability in performing current and future wartime missions. The scope of work may include development of an AoA, studies and analysis, a CDD, and/or any other analysis or documentation necessary to establish a POR. Additionally, this project may include airborne integration experiments or demonstrations of emerging technologies.

Costs include any analysis, documentation, and related expenses necessary to establish a program of record and support the B-52 weapon system. Additionally, other costs include PMA and centralized support and initiatives for anticipated weapon system enhancements (to include efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total cost of ownership).

Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continue aircrew safety and mission effectiveness.

B-52 AMFC Test Support

"The B-52 Test Support project will provide funding for the test aircraft, manpower, and facilities at the Air Force Test Center located at Edwards AFB, California. This project will support the developmental testing and sustainment needs of the B-52 weapon system.

Costs include any analysis, documentation, and related expenses necessary to establish a program of record and support the B-52 weapon system. Additionally, other costs include PMA and centralized support and initiatives for anticipated weapon system enhancements (to include efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total cost of ownership).

Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continue aircrew safety and mission effectiveness.

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675039 / <i>B-52 System Improvements</i>
<p>"The B-52 VLF/LF Modernization integrates a receive-only, low frequency receiver and antenna subsystem to provide a secure, survivable strategic nuclear communication capability for the B-52. This project will consist of integrating an existing VLF/LF terminal into the B-52. Integration includes Group A wiring, rack and antenna, and the Group B terminal Line Replaceable Unit (LRU).</p> <p>Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. As the VLF/LF provides future communication growth to the B-52, emerging security/certification requirements (nuclear certification, cyber security, program protection, crypto modernization, etc.) as well as other aircraft upgrades (Link 16, EHF, 1760 IWBW, Mode S/Mode 5, IFF, BSB, Re-Engine, etc.) may require studies and/or support for potential impact to VLF/LF. Funds may be used to procure, test, and field terminals.</p> <p>DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.</p> <p>Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness."</p> <p>B-52 Reengining The B-52 Re-Engine Program (REP) supports nuclear and conventional operations by replacing the current TF33-PW-103 engine on the B-52H aircraft. The TF33-PW-103 engine is increasingly difficult to sustain due to diminished manufacturing sources and obsolescent technologies; the AF Propulsion Directorate projects the engine will become unsustainable by 2030. This sustainment program will replace the current TF33-PW-103 engine with jet engines of similar size, weight, and thrust characteristics. The development, production and installation of new engines and related subsystems will replace the legacy equipment on all 76 B-52H aircraft. B-52 REP will take advantage of advances in technology and on-going development efforts to acquire engines and integrate them into the B-52. The use of new technology will increase both the overall reliability/maintainability of the propulsion system and produce additional electrical power generation capabilities for emerging requirements. This Re-Engine Program will allow the operational command (AF Global Strike Command) to fully utilize the capabilities of the B-52H aircraft to employ an array of nuclear and conventional weapons while saving fuel and extending the range/loiter capabilities of the aircraft. In addition, applicable training devices for the engine throttles and engine health monitoring subsystem must also be developed, modified and/or upgraded in conjunction with the aircraft modifications. This upgrade will also require corresponding modification of the Weapon System Trainers (WST). As the REP brings additional capability to the B-52, emerging security/certification requirements (nuclear hardening, cyber security, program protection, etc.) will also need to be addressed. Several concurrent aircraft upgrades during the REP may necessitate studies be performed during the program to determine optimal engine installation and deployment options.</p> <p>B-52 Advanced Targeting Pod (ATP) Multi-Functional Color Display (MFCD) "The B-52 Advanced Targeting Pod (ATP) Multi-Functional Color Display (MFCD) project consists of a monitor upgrade with a 10 gigabyte Ethernet connection. The current targeting pod display is outdated and experiencing a historic break rate. Additionally, the current monitor does not support current and emerging video resolution improvements of the fielded Sniper and LITENING ATPs. The B-52's ATP is now capable of transmitting HD color and video at a much higher resolution than the current monochrome monitor; this upgrade will improve SA and combat lethality.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force				Date: February 2018				
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons		Project (Number/Name) 675039 / B-52 System Improvements				
Costs include any analysis, documentation, and related expenses necessary to establish a POR and support the B-52 weapon system. Additionally, other costs include PMA and centralized support and initiatives for anticipated weapon system enhancements (to include efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total cost of ownership).								
Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continue aircrew safety and mission effectiveness.								
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 Systems Improvements				0.000	0.050	0.050	0.000	0.050
Description: Initiate Analysis of Alternatives, modeling, simulation, testing, and demonstration, including but not limited to: Studies of existing and planned avionics, communications/navigation, electrical, weapons, flight, and nuclear-related aircraft systems and subsystems to support the future viability of the B-52 fleet.								
FY 2018 Plans:								
Continue Analysis of Alternatives, modeling, simulation, testing, and demonstration, including but not limited to: Studies of existing and planned avionics, communications/navigation, electrical, weapons, flight, and nuclear-related aircraft systems and subsystems to support the future viability of the B-52 fleet.								
FY 2019 Base Plans:								
Continue Analysis of Alternatives, modeling, simulation, testing, and demonstration, including but not limited to: Studies of existing and planned avionics, communications/navigation, electrical, weapons, flight, and nuclear-related aircraft systems and subsystems to support the future viability of the B-52 fleet.								
FY 2019 OCO Plans:								
N/A								
FY 2018 to FY 2019 Increase/Decrease Statement:								
N/A								
Title: B-52 Re-Engining				0.000	10.000	0.000	0.000	0.000
Description: Initial evaluation effort to study replacement of the current TF33-PW-103 engine with jet engines of similar size, weight, and thrust characteristics. The development, production and installation of new engines and related subsystems will replace the legacy equipment on all 76 B-52H aircraft. B-52 Re-Engine Program will take advantage of advances in technology and on-going development efforts to acquire engines and integrate them into the B-52.								
FY 2018 Plans:								

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons		Project (Number/Name) 675039 / B-52 System Improvements		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Begin TMRR phase in support of Milestone B decision. Complete Materiel Development Decision and Acquisition Strategy Panel. FY 2019 Base Plans: N/A - transfer to BPAC 675129 in FY19 FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A - Future efforts moved to BPAC 675129						
Title: AFMC Test Assets Description: B-52 Test Support provides funding for the test aircraft, manpower and facilities at the Air Force Test Center, Edwards AFB. &						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force								Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons			Project (Number/Name) 675039 / B-52 System Improvements				
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
N/A											
FY 2019 Base Plans: Approve Acquisition and Contracting Strategy for the B-52 VLF/LF and accomplish MS B. Submit RFP for Engineering and Manufacturing Development (EMD) effort. Negotiate and award EMD proposal.											
FY 2019 OCO Plans: N/A											
FY 2018 to FY 2019 Increase/Decrease Statement: This program is an FY19 New Start											
Title: Advanced Target POD MFCD						0.000	0.000	1.579	0.000	1.579	
Description: B-52 Advanced Targeting Pod Monitor Upgrade with 10 Gig Ethernet connection. ATPs are capable of transmitting high definition color, picture in picture video at a much higher resolution than the current monochrome ATP monitor can display. Capability increase will improve combat lethality and situational awareness.											
FY 2018 Plans: N/A											
FY 2019 Base Plans: Initiate development activities for the B-52 Advanced Targeting Pod Monitor Upgrade with 10 Gig Ethernet connection. Begin TMRR efforts.											
FY 2019 OCO Plans: N/A											
FY 2018 to FY 2019 Increase/Decrease Statement: This program is an FY19 New Start											
Accomplishments/Planned Programs Subtotals						0.000	10.050	41.230	0.000	41.230	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 B052000: BP11 Aircraft Procurement ATP MFCD	-	-	-	-	-	-	-	22.907	16.216	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force							Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>			Project (Number/Name) 675039 / <i>B-52 System Improvements</i>				

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 06 B052000: <i>BP16 Initial Spares - ATP MFCD</i>	-	-	-	-	-	-	-	-	2.232	Continuing	Continuing
• APAF 05 B052000 (2)...: <i>BP11 Aircraft Procurement VLF/LF Modernization</i>	-	-	-	-	-	-	8.410	33.557	57.852	Continuing	Continuing

Remarks

D. Acquisition Strategy

Analyses of Alternatives will be conducted by various AFLCMC organizations and AFGSC.

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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675039 / B-52 System Improvements					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
System Improvements Studies and Analysis - Re-Engining	SS/ Various	The Boeing Company, 559 SMXS/MXDPBA : Oklahoma City, OK	-	-		10.000	Jun 2017	-		-		-	Continuing	Continuing	-
VLF/LF EMD - BPAC 675805	SS/ Various	Various : Oklahoma City, OK	-	-		-		19.835	Jul 2019	-		19.835	Continuing	Continuing	-
Advanced Target POD MFCD - BPAC 675807	TBD	TBD : TBD	-	-		-		1.579	Jun 2019	-		1.579	Continuing	Continuing	-
Subtotal			-	-		10.000		21.414		-		21.414	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
VLF/LF - BPAC 675805	Various	Various : NV	-	-		-		1.000	Dec 2018	-		1.000	Continuing	Continuing	-
Subtotal			-	-		-		1.000		-		1.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
AFMC Test Aircraft support - BPAC 675803	PO	AFTC : Edwards AFB, CA	-	-		-		17.766	Oct 2018	-		17.766	Continuing	Continuing	-
Subtotal			-	-		-		17.766		-		17.766	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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-52 Centralized Support, Program Management Administration, TDY,	Various	TBD : NV	-	-		0.050	Jan 2018	0.050	Jan 2019	-		0.050	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675039 / B-52 System Improvements					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
A&AS Contractor Support - 675039															
B-52 Centralized Support, Program Management Administration, TDY, A&AS Contractor Support - 675039VLF/LF - BPAC 675805	Various	Various : TBD	-	-		-		1.000	Dec 2018	-		1.000	Continuing	Continuing	-
Subtotal			-	-		0.050		1.050		-		1.050	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		10.050		41.230		-		41.230	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force

Date: February 2018

Appropriation/Budget Activity

3600 / 7

R-1 Program Element (Number/Name)

PE 0101113F / B-52 Squadrons

Project (Number/Name)

675039 / B-52 System Improvements

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Systems Improvements																												
System Improvements Studies and Analysis, etc. (Began 2Q16)																												
AFMC Test Aircraft support - BPAC 675803																												
Test Support																												
B-52 VLF/LF Modernization - BPAC 675805																												
MS B																												
EMD																												
MS C																												
Production																												
ATP - MFCD BPAC 675807																												
TMRRMilestone BEMDMilestone CProductionRequired Assets Available																												
MS B																												
EMD																												
MS C																												
Production																												
Required Assets Available																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force

Date: February 2018

Appropriation/Budget Activity

3600 / 7

R-1 Program Element (Number/Name)

PE 0101113F / B-52 Squadrons

Project (Number/Name)

675039 / B-52 System Improvements

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Improvements				
System Improvements Studies and Analysis, etc. (Began 2Q16)	1	2017	4	2023
AFMC Test Aircraft support - BPAC 675803				
Test Support	1	2019	4	2023
B-52 VLF/LF Modernization - BPAC 675805				
MS B	3	2019	3	2019
EMD	4	2019	3	2021
MS C	3	2021	3	2021
Production	4	2021	4	2023
ATP - MFCD BPAC 675807				
TMRRMilestone BEMDMilestone CProductionRequired Assets Available	4	2019	1	2020
MS B	1	2020	1	2020
EMD	1	2020	4	2021
MS C	4	2021	4	2021
Production	1	2022	4	2023
Required Assets Available	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675041 / Bomber Tactical Data Link			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675041: Bomber Tactical Data Link	-	10.397	8.167	30.977	0.000	30.977	36.069	44.376	26.617	13.982	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0101113F, project 675041, B-52 Advanced Extremely High Frequency (AEHF) Integration, is a new start.

A. Mission Description and Budget Item Justification

B-52 Bomber Tactical Datalink - Link 16

The B-52 Combat Network Communications Technology (CONNECT) Capability Development Document (CDD), dated 18 March 2004, captures the requirements for a Tactical Data Link (TDL) capability on the B-52. The B-52 TDL provides low latency, jam-resistant situational awareness and C2 communications needed to support in-theater operations and missions. This project will consist of integrating an existing off-the-shelf Link 16 terminal into the B-52. Integration includes Group A wiring, rack and antennae, and the Group B terminal LRU. The TDL terminal will be fully integrated with CONNECT. This Line-of-Sight (LOS) Link 16 capability allows the warfighter to utilize this capability by maintaining situational awareness, avoiding threats, and employing an array of weapons.

Funds may be used to address emerging and short-notice DMSMS issues. As the Link-16 upgrade brings additional capability to the B-52, emerging security requirements (JRE messaging, crypto modernization, etc.) as well as other aircraft upgrades (1760 IWBW, Mode S/Mode 5, IFF, BSB updates, RMP, Re-Engining, etc.) may require study/support for potential impact to the CONNECT and Link-16 system. Funds may also be used for Engineering Development Models (EDMs) as well as testing and fielding terminals.

DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Additionally, implementation requirements and standards are defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

B-52 Advanced Extremely High Frequency (AEHF) Integration

The B-52 Advance Extremely High Frequency (AEHF) Integration SATCOM system provides a 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 battle space. This communications upgrade replaces the Military Strategic and Tactical Relay (MILSTAR) Ultra High Frequency (UHF) SATCOM capability (MILSTAR is nearing system end of life) on the B-52. The AEHF Integration effort will integrate the radio, antenna and system components required to provide two-way EHF communication for the B-52. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. As AEHF Integration provides future communication growth to the B-52, emerging security/certification requirements (nuclear certification, cyber security, program protection, crypto modernization, etc.) as well as other aircraft upgrades (Link 16, VLF/LF, 1760 IWBW, Mode S/Mode 5, IFF, BSB, Re-Engine, etc.) may require studies and/or support for potential impact to AEHF. Funds

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons	Project (Number/Name) 675041 / Bomber Tactical Data Link				
may be used to procure, test, and field terminals. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative. Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness. Trainers and Upgrades for B-52 AEHF. In order to maintain currency with the latest aircraft configuration, the B-52 Systems Improvements projects will update existing trainers or use Computer-Based Training (CBT) to add any new systems improvement functionality to meet user training requirements and update/maintain the Systems Integration Lab (SIL) for the Weapon System Trainers (WSTs).						
Funds may be used to resolve emerging safety of flight and DMS issues, accommodate technology insertion, and fulfill FAA (or other) mandates necessary to ensure continued aircrew safety and mission effectiveness.						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Bomber Tactical Data Link</p> <p>Description: The TDL will provide low latency, jam-resistant situation awareness and command/control needed to support in-theater operations/missions via a line-of-sight (LOS) Link 16 capability. The program will consist of integrating an existing off-the-shelf Link 16 terminal into the B-52. This will include Group A wiring, rack and antennae and the Group B terminal LRU. The terminals will be installed inside the fuselage of the aircraft and external antennas will be mounted on the fuselage. The TDL terminal and LOS capability will be integrated with the rest of the CONECT subsystem.</p> <p>FY 2018 Plans: Continue EMD phase, with subsequent Developmental and Operational testing.</p> <p>FY 2019 Base Plans: Continue EMD phase to include unique software programming, and continued developmental and operational testing.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increased requirement to accommodate increased cost of EMD phase and to include unique software programming, and continued developmental and operational testing</p>		10.397	8.167	17.528	0.000	17.528
<p>Title: B-52 Advanced Extremely High Frequency (AEHF) Integration</p> <p>Description: The B-52 Advance Extremely High Frequency (AEHF) Integration SATCOM system provides a survivable, low probability of intercept/detection, high bandwidth system that ensures secure intra/inter-flight</p>		0.000	0.000	13.449	0.000	13.449

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018																																					
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>				Project (Number/Name) 675041 / <i>Bomber Tactical Data Link</i>																																							
B. Accomplishments/Planned Programs (\$ in Millions) and two-way command and control communications in the modern anti-access/aerial denial battle space. This communications upgrade replaces the Military Strategic and Tactical Relay (MILSTAR) and its Ultra High Frequency (UHF) SATCOM capability (MILSTAR is nearing system end of life) on the B-52. The AEHF Integration effort will integrate the radio, antenna and system components required to provide two-way EHF communication for the B-52. FY 2018 Plans: N/A FY 2019 Base Plans: Approve Acquisition and Contracting Strategy for B-52 AEHF Integration and accomplish MS B. Submit RFP for Engineering and Manufacturing Development (EMD) effort. Negotiate and award EMD proposal. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: This program is an FY19 New Start						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total																																					
Accomplishments/Planned Programs Subtotals						10.397	8.167	30.977	0.000	30.977																																					
C. Other Program Funding Summary (\$ in Millions) <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Line Item</th> <th style="text-align: center;">FY 2017</th> <th style="text-align: center;">FY 2018</th> <th style="text-align: center;">FY 2019 Base</th> <th style="text-align: center;">FY 2019 OCO</th> <th style="text-align: center;">FY 2019 Total</th> <th style="text-align: center;">FY 2020</th> <th style="text-align: center;">FY 2021</th> <th style="text-align: center;">FY 2022</th> <th style="text-align: center;">FY 2023</th> <th style="text-align: center;">Cost To Complete</th> <th style="text-align: center;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>• APAF 05 Line Item B05200: <i>BP11 Production</i></td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">2.976</td> <td style="text-align: center;">-</td> <td style="text-align: center;">2.976</td> <td style="text-align: center;">15.925</td> <td style="text-align: center;">30.214</td> <td style="text-align: center;">24.917</td> <td style="text-align: center;">25.372</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">99.404</td> </tr> <tr> <td>• APAF 06 Line Item B05200: <i>Initial Spares/Repair Parts</i></td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">2.381</td> <td style="text-align: center;">2.499</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">4.880</td> </tr> </tbody> </table>												Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost	• APAF 05 Line Item B05200: <i>BP11 Production</i>	-	-	2.976	-	2.976	15.925	30.214	24.917	25.372	0.000	99.404	• APAF 06 Line Item B05200: <i>Initial Spares/Repair Parts</i>	-	-	-	-	-	2.381	2.499	-	-	0.000	4.880
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost																																				
• APAF 05 Line Item B05200: <i>BP11 Production</i>	-	-	2.976	-	2.976	15.925	30.214	24.917	25.372	0.000	99.404																																				
• APAF 06 Line Item B05200: <i>Initial Spares/Repair Parts</i>	-	-	-	-	-	2.381	2.499	-	-	0.000	4.880																																				
Remarks																																															
D. Acquisition Strategy The Milestone Decision Authority (MDA) approved the 28 October 2016 decision of the B-52 Link-16 Acquisition Strategy Panel (ASP), which authorized the program to enter into the EMD phase with the Original Equipment Manufacturer (OEM). The program is required to return to the MDA for the production/deployment ASP following a successful Preliminary Design Review (PDR).																																															

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675041 / <i>Bomber Tactical Data Link</i>

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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675041 / Bomber Tactical Data Link					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Link 16 EMD - Wright Patt - BPAC 675041	SS/ Various	Boeing : Oklahoma City, OK	-	8.897	Jul 2017	6.667	Feb 2018	16.000	Feb 2019	-		16.000	Continuing	Continuing	-
AEHF Development - BPAC 671810	SS/CPAF	Various : Various	-	-		-		11.449	Jul 2019	-		11.449	Continuing	Continuing	-
Subtotal			-	8.897		6.667		27.449		-		27.449	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Other Government Cost (OGC) - Link 16 BPAC 675041	Various	Various : NV	-	1.000	May 2017	1.000	Mar 2018	1.000	Mar 2019	-		1.000	Continuing	Continuing	-
Other Government Cost (OGC) - AEHF BPAC 671810	C/CPAF	Not specified. : TBD	-	-		-		1.000	Dec 2018	-		1.000	Continuing	Continuing	-
Subtotal			-	1.000		1.000		2.000		-		2.000	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
A&AS, Travel, Centralized Support - Link 16 BPAC 675041	Various	Various : NV	-	0.500	Jun 2017	0.500	Mar 2018	0.528	Mar 2019	-		0.528	Continuing	Continuing	-
A&AS, Travel, Centralized Support - AEHF BPAC 671810	Various	Various : TBD	-	-		-		1.000	Dec 2018	-		1.000	Continuing	Continuing	-
Subtotal			-	0.500		0.500		1.528		-		1.528	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons					Project (Number/Name) 675041 / Bomber Tactical Data Link			
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	10.397		8.167		30.977		-		30.977	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity								R-1 Program Element (Number/Name)				Project (Number/Name)			
3600 / 7								PE 0101113F / B-52 Squadrons				675041 / Bomber Tactical Data Link			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Bomber Tactical Data Link																												
EMD																												
Milestone C																												
Production and Install																												
Required Assets Available																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675041 / <i>Bomber Tactical Data Link</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Bomber Tactical Data Link</i>				
EMD	4	2017	3	2020
Milestone C	4	2020	4	2020
Production and Install	4	2020	4	2023
Required Assets Available	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675048: 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)	-	28.870	15.164	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MIL-STD-1760 Internal Weapons Bay Upgrade (IWBU) enables the integration of the 1760 weapons capability into the bomb bay on 78 B-52H aircraft. It includes two Ground Instructional Training Aircraft (GITA), utilizing 44 Common Strategic Rotary Launchers (CSRLs) converted into Conventional Rotary Launchers (CRLs). Three of the CRLs will be modified under EMD for test purposes.

The 1760 IWBU project is segmented into increments. Increment 1.0 provides internal and external carriage of JDAM, Laser-JDAM, JASSM, JASSM/ER, MALD, and MALD/J. It consists of two sub-increments 1.1 and 1.2. This requirement's CDD was validated by the Air Force Requirements Oversight Council (AFROC) in June 2013.

The 1760 CDD was revalidated as a Capability Production Document (CPD) by the AFROC in February 2015. Development efforts for Increment 1.1 were completed in November 2015 and Air Force Global Strike Command (AFGSC) declared Initial Operational Capability (IOC) in May 2016.

Increment 1.1 utilizes 44 CSRLs converted into CRLs, where three of the CRLs will be modified under EMD for test purposes.

Increment 1.2 converts 44 CRLs three of which will be modified under EMD and 78 B-52H aircraft. This includes two GITA.

Increment 1.2 develops the capability for internal carriage of eight Joint Air-to-Surface Standoff Missiles (JASSM) and its variants, to include JASSM Extended Range (JASSM-ER), and eight Miniature Air Launched Decoys (MALD) and its variants, to include MALD Jammer (MALD-J). This increment also develops the capability for external carriage for 12 JASSM-ER.

Increment 1.2 completed Preliminary Design Review (PDR) in October 2015. Critical Design Review (CDR) was conducted in March 2016. Milestone B approval was granted in April 2016. An Integrated Baseline Review (IBR) was conducted in May 2016, validating cost and schedule baselines. Long Lead parts approval was granted in October 2016. In addition, a change from Low Rate Initial Production (LRIP)/Full Rate Production (FRP) to an FRP-only strategy with 2 lot buys; 1 in FY18 and 1 in FY19, was approved in October 2016.

Upon completion of JASSM/ER software development, an interim capability providing for carriage and deployment of no less than 20 JASSM/ER [8 bay (power 4), 12 external] is planned. A combined DT/OT validated this capability in advance of 1.2 Full System validation, and Required Assets Available (RAA) was declared September 2017. AFGSC declared 1.2 Interim Fielding Authorization October 2017.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018			
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons	Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)				
Aircraft Hardware Development: Development of Group A wiring and circuit breakers to supply additional power to the CRL per JASSM-ER requirements (for all 76 operational B-52H aircraft) and two GITA.						
Software Development consists of a modification to existing aircraft SMO and weapon (JASSM and MALD) OFP software to allow for internal and external carriage and modification to ground-based Joint Mission Planning System (JMPS).						
CRL Hardware Development consists of developing Group A-associated interface hardware and two Group B LRUs (power supply and power distribution box). Two CRLs will be modified for Interim and three CRLs will be modified for 1.2 Full system using RDT&E funds.						
Support Equipment consists of developing software updates to the existing MUSTANG to interface with the CRL and the development of additional ground handling support equipment, maintenance stands.						
DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Additionally, implementation requirements and standards are defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.						
Funds may be used to resolve emerging safety of flight and DMS issues, accommodate technology insertion, and fulfill FAA (or other) mandates necessary to ensure continued aircrew safety and mission effectiveness.						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: 1760 IWBU Inc 1.2		28.870	15.164	0.000	-	0.000
Description: Provides internal J-series weapons capability through modification of CRLs with aircraft hardware modifications and upgraded weapon management software. Upon completion of JASSM software coding, but prior to full 1760 hardware design completion, an interim JASSM/ER capability will be validated thru DT/OT in FY17.						
FY 2018 Plans: Completed Increment 1.2 development: Continues Engineering and Manufacturing Development phase in support of Milestone C decision. Continue weapon software modification and Developmental/Operational Test efforts. Continue SEEK EAGLE safe separation analysis. Initiate and conclude modification of two prototype aircraft and two prototype CRLs. Finalize test planning and technical orders in preparation for full 1.2 Capability validation.						
FY 2019 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>		Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)	

B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A							
FY 2018 to FY 2019 Increase/Decrease Statement: EMD complete							
Accomplishments/Planned Programs Subtotals			28.870	15.164	0.000	-	0.000

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item B05200: <i>BP11 Production</i>	3.691	26.934	24.176	-	24.176	-	-	-	-	0.000	54.801
• APAF 06 Line Item B05200: <i>Initial Spares/Repair Parts</i>	0.944	0.814	0.174	-	0.174	-	-	-	-	0.000	1.932
• APAF 07 Line Item B05200: <i>Depot Activation</i>	-	-	0.981	-	0.981	-	-	-	-	0.000	0.981

Remarks

D. Acquisition Strategy

The 1760 IWBU Increment 1.1 project will acquire software development and hardware design via a sole source contract to Boeing Defense, Space & Security (DSS) in Oklahoma City, OK. Deliverables include updated J-series weapon SMOs (software), three prototype modified CSRLs, six LRIP assets, logistics support, ground and flight test support, and engineering drawings. The Increment 1.1 program procured the CRL modification kits via sole source to Boeing DSS, OKC for LRIP and Full Rate Production (FRP), LRIP Installations, and FRP. Installs of the kits will be completed via Contract Field Teams (CFTs).

Increment 1.2 Program has a sole source EMD contract to Boeing Defense, Space & Security (DSS) in Oklahoma City, OK. Deliverables include updated JASSM and MALD weapon SMOs (software), three prototype modified CRLs, logistics support, ground and flight test support, and engineering drawings. Upon completion of JASSM/ER OFP and SMO software coding, an interim capability of no less than 20 JASSM/ER [8 bay (power 4), 12 external] was validated thru DT/OT in FY17. The Increment 1.2 program will procure the CRL modification and aircraft kits for full rate production via sole source. The installs of the kits are planned to be completed via CFTs and PDM.

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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
1.2 1760 IWBU Production Development	Various	Boeing : OKC, OK	-	8.445	Jul 2017	3.000	May 2018	-		-		-	Continuing	Continuing	-
1.2 1760 IWBU MALD OFP	SS/FFP	Raytheon : Tuson, AZ	-	3.071	Mar 2017	1.500	Mar 2018	-		-		-	Continuing	Continuing	-
1.2 1760 IWBU JASSM OFP	SS/FFP	Lockheed : Orlando, FL	-	2.961	Dec 2017	1.500	Feb 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	14.477		6.000		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
1.2 1760 559th SMXG	C/FFP	559 SMXG : Tinker AFB, OK	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	-		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
1.2 1760 IWBU Government Test	PO	419 FLTS : Edwards AFB, CA	-	6.444	May 2017	4.843	Mar 2018	-		-		-	Continuing	Continuing	-
1.2 1760 IWBU Trainer Software	Allot	AFLCMC : Wright Patterson AFB, OH	-	2.093	Jan 2018	-		-		-		-	Continuing	Continuing	-
1.2 1760 IWBU JASSM Test Assets	SS/FFP	Lockheed : Orlando, FL	-	5.856	Sep 2017	3.265	Apr 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	14.393		8.108		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
1.2 1760 IWBU Program Management Administration, A&AS, Travel	Various	AFLCMC : Tinker AFB, OK	-	0.000	Sep 2017	1.056	Sep 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.000		1.056		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	28.870		15.164		-		-		-	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force										Date: February 2018			
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons					Project (Number/Name) 675048 / 1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
1760 Internal Weapons Bay Upgrade																												
1760 IWBU Inc. 1.2 EMD (Began 2Q16)																												
1760 IWBU Inc. 1.2 Milestone C (Jul 18)																												
1760 IWBU Inc. 1.2 Production and Installations																												
1760 IWBU Inc. 1.2 RAA (Jul 19)																												
1760 IWBU Inc. 1.2 FOC (Jul 20)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675048 / <i>1760 INTERNAL WEAPONS BAY UPGRADE (IWBU)</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
1760 Internal Weapons Bay Upgrade				
1760 IWBU Inc. 1.2 EMD (Began 2Q16)	1	2017	3	2018
1760 IWBU Inc. 1.2 Milestone C (Jul 18)	4	2018	4	2018
1760 IWBU Inc. 1.2 Production and Installations	4	2018	4	2020
1760 IWBU Inc. 1.2 RAA (Jul 19)	4	2019	4	2019
1760 IWBU Inc. 1.2 FOC (Jul 20)	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675050 / CONECT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675050: CONECT	-	13.189	7.043	11.138	0.000	11.138	0.001	0.000	0.003	0.002	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The B-52 Combat Network Communications Technology (CONNECT) acquisition project supports nuclear and conventional operations by upgrading the B-52 fleet with data and voice communications capabilities, along with improved threat and situational awareness to support participation in net-centric operations. The CONNECT upgrade includes the following: new MFCDs, a digital interphone system, on-board client/server architecture supporting distributed processing with independent control functions, an Ultra High Frequency (UHF) Beyond Line-Of-Sight (BLOS) Joint Range Extension (JRE) capability Intelligence Broadcast Receiver (IBR), limited Internet Protocol (IP)-based UHF BLOS link supporting voice, e-mail and file transfers, and an Improved Data Modem (IDM)-based digital Variable Message Format (VMF) datalink.

As the CONNECT upgrade brings additional capability to the B-52, emerging communication and security requirements (upgrades to IBR, JRE messages, crypto modernization, etc.) and aircraft upgrades (1760 IWBUs, Mode S/Mode 5 Identification, IFF, etc.) may require study for potential impacts to CONNECT. In order to maintain currency with the latest aircraft configuration, the CONNECT project will update existing trainers (using stimulate/simulate/computer-based training or a mix) to add CONNECT functionality to meet user-training requirements, and update/maintain the SIL for the WSTs. In order to assist PDM during after-install checkout and Barksdale AFB and Minot AFB units with maintenance checkout and operational training, a CONNECT ground station is being developed.

DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Additionally, implementation requirements and standards are defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

Funds may be used to address emerging and short-notice DMSMS issues. Funds may also be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 CONNECT	13.189	7.043	11.138	-	11.138
Description: Diminishing Manufacturing Source (DMS) redesign development and test effort. Continued engineering design of CONNECT capability into the B-52 training systems. Began incorporating changes required due to updates in Government Furnished Equipment (GFE) and crypto modernization requirements. Incorporated/integrated CONNECT with recurring updates of the B-52 software baseline. As the CONNECT upgrade brings additional capability to the B-52, emerging communication and security requirements (upgrades to the IBR, JRE messages, crypto modernization, etc.) and aircraft upgrades (1760 Internal Weapons Bay					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675050 / <i>CONNECT</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Upgrade, Mode S/Mode 5 IFF, etc.) may require study for potential impacts to CONNECT. CONNECT will update the existing trainers and/or use computer-based training to add CONNECT functionality to meet user-training requirements, and update/maintain the System Integration Lab (SIL) and for the WST. A CONNECT ground station, is required in order to assist PDM during after-install checkout, and provide Barksdale/Minot units with maintenance checkout and operational training capability.</p> <p>FY 2018 Plans: Continue Diminishing Manufacturing Source (DMS) redesign development and test effort. Continue the engineering design of the CONNECT ground station, required in order to assist PDM during after-install checkout, and provide Barksdale/Minot units with maintenance checkout and operational training capability. CONNECT will continue the development/update of the existing trainers, by simulation/computer-based training or a mix, to add CONNECT functionality to meet user-training requirements, and update/maintain the SIL for the Weapon System Trainer (WST). Continue development of offensive station mission trainer.</p> <p>FY 2019 Base Plans: Continue Diminishing Manufacturing Source (DMS) redesign development and test effort. Continue the engineering to assist PDM during after-install checkout, and provide Barksdale/Minot units with maintenance checkout and operational training capability. CONNECT will continue the development/update of the existing trainers, by simulation/computer-based training or a mix, to add CONNECT functionality to meet user-training requirements, and update/maintain the SIL for the Weapon System Trainer (WST). Continue development of offensive station mission trainer.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to WST upgrade to BSB07 to support CONNECT new moving map. Update AFTRS R3 to AFTRS R4 integration. Upgrade EMD test jet to CONNECT FRP configuration.</p>					
Accomplishments/Planned Programs Subtotals	13.189	7.043	11.138	-	11.138

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item B05200: <i>BP11 Production</i>	99.068	74.355	55.444	-	55.444	22.067	22.261	14.569	13.796	Continuing	Continuing
• APAF 06 Line Item B05200: <i>Initial SparesRepair Parts</i>	4.561	4.609	-	-	-	-	-	-	-	0.000	9.170

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force									Date: February 2018		
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675050 / CONECT			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 07 Line Item B05200: Post Production Support	28.125	0.199	12.819	-	12.819	4.641	5.550	5.662	5.765	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The B-52 CONECT EMD prime contract is a sole source to Boeing Defense, Space & Security (DSS) in Oklahoma City, OK. Boeing DSS designs, develops, tests and procures necessary equipment from their subcontractors; developed engineering drawings, logistic and technical data. The Government is developing the Time Compliance Technical Order (TCTO) for installation on the B-52. Pro-Active Systems is the current contractor for the trainer update to integrate CONECT into the existing trainers (currently in source selection).											
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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675050 / CONECT					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
AFTRS R3 Integration	SS/CPAF	The Boeing Company : Oklahoma City, OK	-	2.118	Oct 2016	1.979	Oct 2017	3.000	Dec 2018	-		3.000	Continuing	Continuing	-
CONECT Weapon Sys Trainer Update	C/Various	Aviation Training Consultants LLC : Edmond, OK	-	10.040	May 2017	5.064	May 2018	3.500	Nov 2018	-		3.500	Continuing	Continuing	-
Subtotal			-	12.158		7.043		6.500		-		6.500	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Product Support	Various	Not specified. : NV	-	0.922	Feb 2017	-		2.138	Apr 2019	-		2.138	Continuing	Continuing	-
Subtotal			-	0.922		-		2.138		-		2.138	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Ground Station Testing	RO	Not specified. : NV	-	0.109	Mar 2017	-		-		-		-	Continuing	Continuing	-
EMD Test Jet to FRP Configuration	C/CPAF	Not specified. : TBD	-	-		-		2.500	Oct 2018	-		2.500	Continuing	Continuing	-
Subtotal			-	0.109		-		2.500		-		2.500	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	13.189		7.043		11.138		-		11.138	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675050 / <i>CONNECT</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
CONNECT																												
Weapon System Trainer (WST) Upgrade																												
WST System Integration Lab (SIL) Development																												
System Integration Lab Relocation																												
Offensive Station Mission Trainer (OSMT) Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675050 / <i>CONNECT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CONNECT				
Weapon System Trainer (WST) Upgrade	1	2017	2	2019
WST System Integration Lab (SIL) Development	1	2017	1	2019
System Integration Lab Relocation	1	2018	4	2019
Offensive Station Mission Trainer (OSMT) Development	2	2018	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675055 / GPS-IU			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675055: GPS-IU	-	9.525	18.767	37.030	0.000	37.030	1.985	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The GPS IU Upgrade program will provide increased throughput and memory capacity by replacing the current processor, static memory, and necessary associated electronics with a newer processor, more memory, and sustainable electronic packages. This program will replace six Circuit Card Assemblies (CCA) which include combining three Circuit Cards into one Input/Output (I/O) CCA. The Backplane and Motherboard will require an upgrade to integrate the new CCAs: the Central Processing Unit / 1553, the power supply CCA, and the video graphics cards. The Input/Output CCA will combine the Discrete Inputs Analog, Audio Video (DAAV), Discrete Outputs (DOA) and Serial Busses functionality. This upgrade will improve system reliability and address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues on subcomponents of the IU.

In addition the new GPS IU will retain the existing functions and interfaces of the legacy GPS IU, and provide additional interfaces to allow for future growth requirements: Which include two Ethernet Ports and two connectors on face-plate for future growth.

The GPS IU integrates GPS Position, Navigation and Timing (PNT) data into navigation, communications, and weapons systems on board the B-52. The GPS IU acts as a controller for a MIL-STD-1553 data bus communications path. The major areas of support include GPS interface control and monitoring, targeting pod functions, navigation displays for the Pilot and Copilot stations, and Identification Friend or Foe (IFF) control functions.

Originally developed with a 33MHz processor with 4MB of Static Random Access Memory (SRAM), the GPS IU has become overloaded as more software has been added to the B-52. Currently operating at 86% throughput capacity and at 90% memory capacity, it is projected to exceed the designated safety threshold of 95% memory load by 2018. The GPS IU is also facing parts obsolescence issues. Studies show that the current spares will be exhausted by 2018. The upgrade will improve system reliability and address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues on subcomponents of the IU. The modified GPS IU will retain the existing functions and interfaces of the legacy GPS IU, and provide additional interfaces to allow for future growth requirements.

GPS IU requires upgrading to incorporate any other GPS dependent capabilities on the B-52 platform. B-52 fleet will have the capability to carry additional GPS dependent weapons and targeting pods, and the increased capacity to incorporate future GPS-dependent capabilities beyond 2018.

Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.

Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675055 / GPS-IU			
B. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total			
Title: Global Positioning System (GPS) Interface Unit (IU) Description: Global Positioning System (GPS) Interface Unit (IU) Upgrade will replace three circuit card assemblies in the GPS IU, as well as the backplane (to integrate the new and old CCAs): the Central Processing Unit/1553, the power supply CCA, and the video graphics card. FY 2018 Plans: Continue GPS IU Upgrade development. Complete TMRR phase in support of Milestone B decision. Award EMD sole source contract to Boeing, OKC FY 2019 Base Plans: Continue EMD and begin development phase and DT/OT. FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased due to additional DMS issues identified and the current design will not support new components. As a result additional hardware/software is required to include; combining 3 circuit card assemblies into one input/output card, adding an Ethernet port/connectors, and increasing test assets required from four to eight.				9.525	18.767	37.030	-	37.030			
Accomplishments/Planned Programs Subtotals				9.525	18.767	37.030	-	37.030			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item B05200: BP11 Production	-	-	-	-	-	25.440	23.904	11.079	11.280	Continuing	Continuing
• APAF 06 Line Item B05200: Initial Spares	-	-	-	-	-	-	-	4.760	4.846	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The GPS IU Modernization program will begin development in the Technology Maturation and Risk Reduction (TMRR) phase via a sole source contract to Boeing Defense, Space & Security (DSS) in Oklahoma City, OK. Development will continue in the EMD phase via a sole source contract to Boeing DSS, OKC. Deliverables include software, eight modernized prototypes, logistics support, ground and flight test support, and engineering drawings.											

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons	Project (Number/Name) 675055 / GPS-IU
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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675055 / GPS-IU					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
GPS-IU TMRR	SS/ Various	Boeing : Oklahoma City, OK	-	9.225	Mar 2017	7.000	Dec 2017	0.000		-		0.000	Continuing	Continuing	-
GPS-IU EMD Contract	SS/ Various	Boeing : Oklahoma City, OK	-	-		11.313	Jun 2018	36.770	Jan 2019	-		36.770	Continuing	Continuing	-
Subtotal			-	9.225		18.313		36.770		-		36.770	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
PMA, Contractor Support, Travel	Various	Various : NV	-	0.300	Jan 2017	0.454	Jan 2018	0.260	Oct 2018	-		0.260	Continuing	Continuing	-
Subtotal			-	0.300		0.454		0.260		-		0.260	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	9.525		18.767		37.030		-		37.030	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force	Date: February 2018
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675055 / <i>GPS-IU</i>
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
GPS-IU																												
MS A (Mar 17)																												
TMRR Phase I																												
TMRR Phase II																												
MS B (Apr 18)																												
EMD																												
DT/OT																												
MS C																												
Production & Installs																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675055 / <i>GPS-IU</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>GPS-IU</i>				
MS A (Mar 17)	2	2017	2	2017
TMRR Phase I	2	2017	3	2017
TMRR Phase II	4	2017	4	2018
MS B (Apr 18)	3	2018	3	2018
EMD	3	2018	1	2021
DT/OT	3	2019	2	2020
MS C	1	2021	1	2021
Production & Installs	2	2021	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675056 / B-52 Radar Modernization Program (RMP)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675056: B-52 Radar Modernization Program (RMP)	-	4.637	15.226	56.864	0.000	56.864	119.005	154.870	179.148	177.356	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The B-52 Radar Modernization Program (RMP) supports nuclear and conventional operations by replacing the current APQ-166 radar on the B-52H aircraft. The APQ-166 system will be increasingly difficult to sustain due to diminished manufacturing sources and obsolescent technologies; the current failure rate of the APQ-166 places long-duration missions at risk. This modernization program will encompass the radar antenna array and up to 14 individual LRUs that comprise the entire radar system. Development, production and installation of new components and systems to replace the legacy equipment; to be installed on all 76 B-52H aircraft. RMP will take advantage of advances in technology and on-going development efforts to acquire, to the maximum extent possible, previously developed Radar systems and integrate them into the B-52. The use of new technology will increase both the overall reliability of the radar system and the capabilities for new missions. This Radar Modernization Program will allow the operational command (AF Global Strike Command) to fully utilize the capabilities of the B-52H aircraft to employ an array of nuclear and conventional weapons and to perform mission-essential navigation and weather avoidance functions. In addition, applicable training devices for the new radar subsystem must also be developed, modified and/or upgraded in conjunction with the aircraft modifications. This upgrade will affect all three Weapon System Trainers (WST), the WST Training Systems Integration Laboratory (SIL), and both B-52 Offensive Station Maintenance Trainers (OSMT).

As the RMP upgrade brings additional capability to the B-52, emerging security/certification requirements (nuclear certification, cyber security, program protection, crypto modernization, etc.), increased radar integration (advanced targeting pod, mission planning, crew vehicle interfaces), as well as other aircraft upgrades (Link 16, EHF, 1760 IWBU, Mode S/Mode 5, IFF, BSB, Re-Engine, etc.) may require studies and/or support for potential impact to RMP.

Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

Funds may be used to resolve emerging safety of flight, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Radar Modernization Program	4.637	15.226	56.864	-	56.864

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675056 / B-52 Radar Modernization Program (RMP)			
B. Accomplishments/Planned Programs (\$ in Millions)											
						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Description: Support nuclear and conventional operations by replacing the current APQ-166 radar on the B-52H aircraft. Development and production of new systems to replace the legacy equipment and to be installed on all 76 B-52H aircraft. FY 2018 Plans: Continue requirements development/refinement, acquisition planning, and preparations for radar vendor competition/award and Developmental Request for Proposal Release Date (DRFPRD). FY 2019 Base Plans: Continue requirements development/refinement, acquisition planning, and preparations for radar vendor competition/award. Also begin OEM integration efforts and complete system Preliminary Design Review. FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to ramp up of risk reduction activities											
						Accomplishments/Planned Programs Subtotals					
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line Item B05200: BP11 Production	-	-	-	-	-	5.809	12.995	13.256	13.497	Continuing	Continuing
• APAF 07 Line Item B05200: Post Production Support	-	-	-	-	-	-	0.098	0.100	0.102	Continuing	Continuing
• APAF 06 Line Item B05200: Initial SparesRepair Parts	-	-	-	-	-	0.118	0.197	0.200	0.204	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The Milestone Decision Authority approved the B-52 RMP Materiel Development Decision (MDD) and signed the Acquisition Decision Memorandum on 11 March 2017. This program has been designated as an ACAT I Pre-Major Defense Acquisition Program (MDAP) with authorization to enter into the Pre-Milestone B phase with the DRFPRD as the next decision point.											

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons	Project (Number/Name) 675056 / B-52 Radar Modernization Program (RMP)

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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675056 / B-52 Radar Modernization Program (RMP)					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Other Gov (OGC)	TBD	Not specified. : TBD	-	-		-		3.754	Jan 2019	-		3.754	Continuing	Continuing	-
Risk Reduction	TBD	Not specified. : NV	-	3.484	Jul 2017	12.226	Dec 2017	50.910	Jul 2019	-		50.910	Continuing	Continuing	-
Subtotal			-	3.484		12.226		54.664		-		54.664	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Management Support, A&AS, PMA	Various	Not specified. : NV	-	1.153	Aug 2017	3.000	Jan 2018	2.200	Aug 2019	-		2.200	Continuing	Continuing	-
Subtotal			-	1.153		3.000		2.200		-		2.200	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.637		15.226		56.864		-		56.864	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force																Date: February 2018			
Appropriation/Budget Activity 3600 / 7								R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons								Project (Number/Name) 675056 / B-52 Radar Modernization Program (RMP)			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<i>Radar Modernization Program</i>																												
Acquisition Planning																												
Risk Reduction																												
Development Request for Proposal Release																												
MS B																												
EMD																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675056 / <i>B-52 Radar Modernization Program (RMP)</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Radar Modernization Program</i>				
Acquisition Planning	3	2017	1	2018
Risk Reduction	1	2018	4	2020
Development Request for Proposal Release	1	2019	1	2019
MS B	4	2020	4	2020
EMD	4	2020	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675057 / B-52 Low Cost Improvement (LCI)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675057: B-52 Low Cost Improvement (LCI)	-	0.000	2.682	2.605	0.000	2.605	2.607	2.605	2.660	2.710	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
<p>This program will include projects to facilitate future B-52 capabilities. Scope of work may involve, but is not limited to, Avionics, Navigation, Situational Awareness (SA) and Defensive Systems. Additionally, develop and integrate emerging technologies for specialized B-52 missions to include Intelligence Surveillance and Reconnaissance (ISR), Targeting and Weapons. Continuing work related to the Mission Data Recorder to make the T-1 modification a Permanent Modification to the platform.</p> <p>DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Additionally, implementation requirements and standards are defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.</p> <p>Funds may be used to address emerging and short-notice DMSMS issues. Funds may be used to resolve emerging safety of flight and DMS issues, accommodate technology insertion, and fulfill FAA (or other) mandates necessary to ensure continued aircrew safety and mission effectiveness.</p>												
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Title: B-52 Low Cost Improvements							0.000	2.682	2.605	-	2.605	
Description: Develop and integrate emerging technologies for specialized B-52 missions to include ISR, targeting, and weapons. This includes performing demonstrations and experimentation of emerging and advanced technologies, as well as supporting external agency projects of the technology in a relevant environment.												
FY 2018 Plans: Develop and integrate emerging technologies for specialized B-52 missions to include ISR, targeting, and weapons. This includes performing demonstrations and experimentation of emerging and advanced technologies, as well as supporting external agency projects of the technology in a relevant environment. Perform work necessary to make the Mission Data Recorder a permanent modification on the platform.												
FY 2019 Base Plans: Develop and integrate emerging technologies for specialized B-52 missions to include ISR, targeting, and weapons. This includes performing demonstrations and experimentation of emerging and advanced												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force							Date: February 2018				
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons			Project (Number/Name) 675057 / B-52 Low Cost Improvement (LCI)					
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
technologies, as well as supporting external agency projects of the technology in a relevant environment. Perform work necessary to make the Mission Data Recorder a permanent modification on the platform.											
FY 2018 to FY 2019 Increase/Decrease Statement: N/A											
Accomplishments/Planned Programs Subtotals						0.000	2.682	2.605	-	2.605	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APAF 05 Line item B05200: BP11 Production	2.331	2.378	2.362	-	2.362	2.412	2.461	2.511	2.557	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Studies and Analyses will be conducted by various AFLCMC organizations and AFGSC. Additionally, the OEM will perform work necessary to make the Mission Data Recorder a permanent modification.											
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 2019 Air Force													Date: February 2018		
Appropriation/Budget Activity 3600 / 7							R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675057 / B-52 Low Cost Improvement (LCI)				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Studies and analyses to develop and integrate emerging technologies for the B-52	C/Various	TBD : NV	-	-		2.682	Feb 2018	2.605	Jan 2019	-		2.605	Continuing	Continuing	-
Subtotal			-	-		2.682		2.605		-		2.605	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Not specified.	TBD	Not specified. : NV	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	-		-		-		-		-	Continuing	Continuing	N/A

Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
-	-	2.682	2.605	-	2.605	Continuing	Continuing	N/A

Remarks This program is a FY18 3600 New Start								
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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force										Date: February 2018				
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)				
3600 / 7					PE 0101113F / B-52 Squadrons					675057 / B-52 Low Cost Improvement (LCI)				

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Low Cost Improvements																												
Low Cost Improvements Studies and Analyses																												
Contract with Boeing Permanent Modification of Mission Data Recorder																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675057 / <i>B-52 Low Cost Improvement (LCI)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Low Cost Improvements</i>				
Low Cost Improvements Studies and Analyses	2	2018	4	2023
Contract with Boeing Permanent Modification of Mission Data Recorder	2	2018	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675058 / B-52 Weapon Sys Trainer Air Ref Training Upgrade			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675058: B-52 Weapon Sys Trainer Air Ref Training Upgrade	-	4.702	13.240	0.000	0.000	0.000	7.858	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The principal mission of the B-52 Training Systems program is to ensure high fidelity simulators and training systems are available for aircrew members to support credible training, maintain proficiencies, and increase skill levels. B-52 Aircrew Training Devices simulates the necessary visual, motion, and audible cues to provide ground training of Air Force Global Strike Command aircrew members. The B-52 Weapon System Trainer (WST) Air Refueling Upgrade is a comprehensive project that will allow B-52 Aircrew to accomplish credible air refueling training in the simulator, which minimizes the requirement for on-aircraft air refueling training. To facilitate this capability, scope of work may involve development of Analysis of Alternatives (AoA), Studies and Analysis, Capability Development Documents (CDD) or any other Analysis or paperwork necessary to establish a program of record. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues. DMSMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 Weapons Systems Trainer Air Refueling Training Upgrade	4.702	13.240	0.000	-	0.000
Description: Upgrade allows pilots to conduct effective air refueling training in a simulator; mitigates tanker availability shortfalls for training.					
FY 2018 Plans: Continuing engineering studies, flight test planning, data collection, data analysis, and software development required to support B-52 Weapon System Trainer Air Refueling Training Upgrade.					
FY 2019 Base Plans: Continuing engineering studies, flight test planning, data collection, data analysis, and software development required to support B-52 Weapon System Trainer Air Refueling Training Upgrade.					
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease in requirement program ramp down					
Accomplishments/Planned Programs Subtotals	4.702	13.240	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons	Project (Number/Name) 675058 / B-52 Weapon Sys Trainer Air Ref Training Upgrade	

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

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line item B05200: BP11 Production	-	1.809	-	-	-	10.998	-	-	-	0.000	12.807

Remarks

D. Acquisition Strategy

The B-52 Training Systems Contract will be utilized for Weapon System Trainer Air Refueling contracting actions.

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 2019 Air Force												Date: February 2018		
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675058 / B-52 Weapon Sys Trainer Air Ref Training Upgrade				

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Weapon System Trainer Air Refueling Training Upgrade	TBD	TBD : NV	-	4.702	Feb 2017	13.240	Feb 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	4.702		13.240		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.702		13.240		-		-		-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>			Project (Number/Name) 675058 / <i>B-52 Weapon Sys Trainer Air Ref Training Upgrade</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<i>Weapon System Trainer</i>																												
Master Flight Test Plan																												
Data Collection/Compilation																												
Software/Hardware Development/Integration/ Test																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675058 / <i>B-52 Weapon Sys Trainer Air Ref Training Upgrade</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Weapon System Trainer</i>				
Master Flight Test Plan	3	2018	2	2019
Data Collection/Compilation	3	2019	2	2020
Software/Hardware Development/Integration/Test	3	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675129 / B-52 Re-Engining			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675129: B-52 Re-Engining	-	0.000	0.000	64.515	0.000	64.515	312.650	313.638	195.584	121.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0101113F, project 675129, B-52 Re-Engining, is a new start.

B-52 Re-Engining is not an FY19 New start. Initial \$10.0M in BPAC 675039 in FY18

A. Mission Description and Budget Item Justification

The B-52 Re-Engine Program (REP) supports nuclear and conventional operations by replacing the current TF33-PW-103 engine on the B-52H aircraft. The TF33-PW-103 engine is increasingly difficult to sustain due to diminished manufacturing sources and obsolescent technologies; the AF Propulsion Directorate projects the engine will become unsustainable by 2030. This sustainment program will replace the current TF33-PW-103 engine with jet engines of similar size, weight, and thrust characteristics. The development, production and installation of new engines and related subsystems will replace the legacy equipment on all 76 B-52H aircraft. B-52 REP will take advantage of advances in technology and on-going development efforts to acquire engines and integrate them into the B-52. The use of new technology will increase both the overall reliability/maintainability of the propulsion system and produce additional electrical power generation capabilities for emerging requirements. This Re-Engine Program will allow the operational command (AF Global Strike Command) to fully utilize the capabilities of the B-52H aircraft to employ an array of nuclear and conventional weapons while saving fuel and extending the range/loiter capabilities of the aircraft. In addition, applicable training devices for the engine throttles and engine health monitoring subsystem must also be developed, modified and/or upgraded in conjunction with the aircraft modifications. This upgrade will also require corresponding modification of the Weapon System Trainers (WST). As the REP brings additional capability to the B-52, emerging security/certification requirements (nuclear hardening, cyber security, program protection, etc.) will also need to be addressed. Several concurrent aircraft upgrades during the REP may necessitate studies be performed during the program to determine optimal engine installation and deployment options.

Cost includes any other analysis or documentation and related expenses necessary to establish a program of record and support the B-52 Weapon System. Cost includes Program Management Administration (PMA) costs, centralized support and initiatives for anticipated weapon system enhancements, to include efforts to improve weapon system operational capabilities, safety, supportability, maintainability, reliability, and total cost of ownership.

Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.

DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force								Date: February 2018				
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>				Project (Number/Name) 675129 / <i>B-52 Re-Engining</i>				
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 Re-Engining Description: This sustainment program will replace the current TF33-PW-103 engine with jet engines of similar size, weight, and thrust characteristics. The development, production and installation of new engines and related subsystems will replace the legacy equipment on all 76 B-52H aircraft. B-52 Re-Engine Program will take advantage of advances in technology and on-going development efforts to acquire engines and integrate them into the B-52. FY 2018 Plans: Begin TMRR phase in support of Milestone B decision. Complete Materiel Development Decision and Acquisition Strategy Panel. FY 2019 Base Plans: Complete TMRR phase, Engine down selection, preliminary design with the integrator, and accomplish Milestone B. Begin EMD. FY 2018 to FY 2019 Increase/Decrease Statement: Program moved from Risk Reduction and Acquisition planning phase into EMD phase.								0.000	0.000	64.515	-	64.515
Accomplishments/Planned Programs Subtotals								0.000	0.000	64.515	-	64.515
C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• APAF 05 B05200: <i>BP11 Production</i>	-	-	-	-	-	-	-	43.632	505.821	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
Ongoing risk reduction activities with Original Equipment Manufacturer. Acquisition Strategy Panel scheduled for 4QFY19.												
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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675129 / B-52 Re-Engining					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Pre-EMD Risk Reduction, Acquisition Planning, preliminary integration design and Engine Source Selection System Performance Requirements decomposition	SS/CPFF	The Boeing Co : Oklahoma City, OK	-	-		-		59.515	Apr 2019	-		59.515	Continuing	Continuing	-
Subtotal			-	-		-		59.515		-		59.515	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Program Management Administration, Centralized Support, A&AS support, TDY	Various	EPASS Contract for A&AS : WPAFB, OH	-	-		-		5.000	Nov 2018	-		5.000	Continuing	Continuing	-
Subtotal			-	-		-		5.000		-		5.000	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		64.515		-		64.515	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force																Date: February 2018			
Appropriation/Budget Activity								R-1 Program Element (Number/Name)								Project (Number/Name)			
3600 / 7								PE 0101113F / B-52 Squadrons								675129 / B-52 Re-Engining			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Re-Engining																												
Pre-EMD Acquisition Planning/Risk Reduction and early Engine Source Selection Planning																												
Milestone B																												
EMD																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675129 / <i>B-52 Re-Engining</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Re-Engining</i>				
Pre-EMD Acquisition Planning/Risk Reduction and early Engine Source Selection Planning	3	2018	3	2019
Milestone B	3	2019	3	2019
EMD	3	2019	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675160 / B-52 Crypto Modernization			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675160: B-52 Crypto Modernization	-	3.230	11.919	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Upgrades aircraft with Mobile User Objective System (MUOS) capable ARC-210 radio systems to prevent loss of BLOS voice and data communications capability.												
Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.												
Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.												
DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 Crypto Modernization								3.230	11.919	0.000	-	0.000
Description: Upgrades aircraft with MUOS capable ARC-210 radio systems to prevent loss of BLOS voice and data communications capability.												
FY 2018 Plans: Continue market research and develop and refine requirements. Release of request for proposal, contract award activities, and systems requirement review in FY2018. Initiate development activities supporting integration of MUOS radio, and planning in the out years for preliminary/critical design reviews, software lab tests/flight tests, combined DT/OT, depot source or repair assignment, and government furnished equipment deliveries and installs. Award EMD contract.												
FY 2019 Base Plans: Continue EMD efforts. Complete preliminary design reviews, s/w lab test, and prepare for FY20 flight testing.												
FY 2018 to FY 2019 Increase/Decrease Statement: Increase needed for Preliminary Design Review and flight test planning.												
Accomplishments/Planned Programs Subtotals								3.230	11.919	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 675160 / B-52 Crypto Modernization			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line item	-	-	14.759	-	14.759	17.722	21.659	22.093	22.495	Continuing	Continuing
B05200: BP11 Production											
Remarks											
Combined Acquisition Strategy (AS) and AS Panel conducted in Dec 2017 and initial POE submitted for coordination/approval.											
D. Acquisition Strategy											
EMD - Expected to execute via a contract with the OEM (Boeing, Oklahoma City).											
Group A Kit (wiring / kitting / receiver) - Execute using Small Business non-competitive 8a											
Group B Kit (APX-119 transponder) - MIPR through iGATM catalog											
Installation - Executed via Contract Field Team (CFT) competitive contract											
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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons						Project (Number/Name) 675160 / B-52 Crypto Modernization			
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Crypto Modernization development and integration activities	TBD	Not specified. : NV	-	2.830	Jan 2017	11.885	Jan 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	2.830		11.885		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Initiate test requirements and DTE planning	TBD	TBD : NV	-	0.300	Jan 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.300		-		-		-		-	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Costs for Program Management Administration and Travel	Various	TBD : NV	-	0.100	Jan 2017	0.034	Jan 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	0.100		0.034		-		-		-	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	3.230		11.919		-		-		-	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force										Date: February 2018									
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)									
3600 / 7					PE 0101113F / B-52 Squadrons					675160 / B-52 Crypto Modernization									

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Crypto Modernization																												
MDD																												
Milestone B																												
EMD contract award																												
EMD																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 675160 / <i>B-52 Crypto Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Crypto Modernization</i>				
MDD	1	2017	1	2017
Milestone B	2	2017	2	2017
EMD contract award	2	2017	2	2017
EMD	2	2017	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 676039 / B-52 Airspace Compliance			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676039: B-52 Airspace Compliance	-	0.000	9.652	36.055	0.000	36.055	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
B-52 Airspace Compliance - Communication, Navigation and Surveillance and Air Traffic Management (CNS/ATM) upgrades are required to comply with increasing FAA requirements. Automatic Dependent Surveillance-Broadcast (ADS-B) upgrades to meet FAA mandate for FY20.												
Funds may be used to resolve emerging safety of flight and diminishing manufacturing sources issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.												
DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: B-52 Airspace Compliance								0.000	9.652	36.055	-	36.055
Description: Communication, Navigation and Surveillance and Air Traffic Management (CNS/ATM) upgrades are required to comply with increasing FAA requirements. Automatic Dependent Surveillance-Broadcast (ADS-B) upgrade to meet FAA mandate for FY20.												
FY 2018 Plans: Establish/stand-up program office, develop and refine requirements, initiate development activities supporting integration of Communication, Navigation and Surveillance and Air Traffic Management (CNS/ATM) upgrades and Automatic Dependent Surveillance-Broadcast (ADS-B) upgrades												
FY 2019 Base Plans: Continue develop and refine requirements, initiate development activities supporting integration of Communication, Navigation and Surveillance and Air Traffic Management (CNS/ATM) upgrades and Automatic Dependent Surveillance-Broadcast (ADS-B) upgrades												
FY 2018 to FY 2019 Increase/Decrease Statement: Funds were rephrased to shorten EMD phase in support of FAA mandate.												
Accomplishments/Planned Programs Subtotals								0.000	9.652	36.055	-	36.055

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 676039 / B-52 Airspace Compliance			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line item	-	-	1.954	-	1.954	19.694	16.374	3.570	3.635	Continuing	Continuing
B05200: BP11 Production											
Remarks											
Combined Acquisition Strategy (AS) and AS Panel conducted in Dec 2017 and initial POE submitted for coordination/approval.											
D. Acquisition Strategy											
EMD - Expected to execute via a contract with the OEM (Boeing, Oklahoma City).											
Group A Kit (wiring / kitting / receiver) - Execute using Small Business non-competitive 8a											
Group B Kit (APX-119 transponder) - MIPR through iGATM catalog											
Installation - Executed via Contract Field Team (CFT) competitive contract											
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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons				Project (Number/Name) 676039 / B-52 Airspace Compliance					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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-52 Airspace Compliance	SS/ Various	TBD : NV	-	-		3.731	Jul 2018	30.977	Jul 2019	-		30.977	Continuing	Continuing	-
Subtotal			-	-		3.731		30.977		-		30.977	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Program Other Government Costs	TBD	TBD : NV	-	-		0.500	Mar 2018	-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.500		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Test Support	TBD	Not specified. : NV	-	-		4.900	Apr 2018	4.900	Apr 2019	-		4.900	Continuing	Continuing	-
Subtotal			-	-		4.900		4.900		-		4.900	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Program Management Administration, TDY, Centralized Support	TBD	Not specified. : NV	-	-		0.521	Jan 2018	0.178	Jan 2019	-		0.178	Continuing	Continuing	-
Subtotal			-	-		0.521		0.178		-		0.178	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		9.652		36.055		-		36.055	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0101113F / B-52 Squadrons			Project (Number/Name) 676039 / B-52 Airspace Compliance			
	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force																Date: February 2018			
Appropriation/Budget Activity								R-1 Program Element (Number/Name)								Project (Number/Name)			
3600 / 7								PE 0101113F / B-52 Squadrons								676039 / B-52 Airspace Compliance			

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Airspace compliance																												
EMD/RFP Release																												
EMD																												
MS C																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101113F / <i>B-52 Squadrons</i>	Project (Number/Name) 676039 / <i>B-52 Airspace Compliance</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Airspace compliance</i>				
EMD/RFP Release	2	2018	3	2018
EMD	4	2018	4	2020
MS C	4	2020	4	2020