| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | | | | | | | | | | Date: May 2017 | |

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: *Research, Development, Test & Evaluation, Air Force I* BA 5: *System Development & Demonstration (SDD)*	PE 0701212F *I Automated Test Systems*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing
6506TE: *Test And Evaluation Support Budget Authority*	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing

Program MDAP/MAIS Code: 6506

Note

This program, BA 05 PE 0701212F, project 6506TE, CAPRE, is a new start.

The Automatic Test System program office is responsible for developing, acquiring and sustain Automatic Test Systems for the United Stated Air Force (USAF).

The Bomber Armament Tester is replacing six legacy testers and combining their capabilities into one tester. The Bomber Armament Tester will support the B-2, B-1 and B-52 platforms.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a secure common Memory Loader Verifier (MLV) that loads operational flight programs for 32 USAF weapons systems. Weapon Systems include but are not limited to A-10, B-1, B-52, C-5, C-17, C-130, CV-22, F-15, F-16, H-60 and KC-46.

A. Mission Description and Budget Item Justification

The Bomber Armament Tester will ensure that our USAF bomber fleet can conduct nuclear deterrence, global power projection and global strike operations to support the President of the United States and Combatant Commanders by providing a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 plus most complex B-1 and B-52 test program sets as Increment 1, B-1 as Increment 2, and B-52 as Increment 3. Currently increment 2 and 3 are unfunded in FYDP.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a common memory loader verifier that loads operational flight programs for weapon systems. CAPRE leads the fleet on Cyber initiatives and is government owned and developed.

RDT&E effort includes developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. The NIM enables validation of digital signature prior to loading the OFP to the aircraft. RDT&E effort also includes software development

Exhibit R-2, **RDT&E Budget Item Justification:** FY 2018 Air Force		**Date:** May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*	

for MIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	14.563	19.062	11.800	0.000	11.800
Current President's Budget	14.422	19.062	18.528	0.000	18.528
Total Adjustments	-0.141	0.000	6.728	0.000	6.728
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.141	0.000	6.728	0.000	6.728

Change Summary Explanation

-$4.5M increase in FY 17 will continue increment 1 efforts of the Bomber Armament Tester program. Increment one includes core tester and test program sets for B-2 aircraft and the most complex B-1 and B-52 test program sets. Increment two will begin the test program set development for the B-1 aircraft and B-52 test program sets. FY 18 funding will continue increment 1 efforts. Increments 2 and 3 are unfunded in the FYDP.

-$6.78M increase in FY 18 includes $6.650M increase for increasing cyber hardening of the Common Aircraft Portable Reprogramming Equipment (CAPRE). Funding will start development on the Network interface module and start the software development.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force											Date: May 2017	

Appropriation/Budget Activity 3600 I 5				R-1 Program Element (Number/Name) PE 0701212F I *Automated Test Systems*				Project (Number/Name) 6506TE I *Test And Evaluation Support Budget Authority*				

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
6506TE: *Test And Evaluation Support Budget Authority*	-	14.422	19.062	18.528	0.000	18.528	13.756	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0701212F, project 6506TE, CAPRE, is a new start.

A. Mission Description and Budget Item Justification

The Bomber Armament Tester will ensure that our USAF bomber fleet can conduct nuclear deterrence, global power projection and global strike operations to support the President of the United States and Combatant Commanders by providing a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 as Increment 1, B-1 as Increment 2, and B-52 as Increment 3. Increment 1 is funded and will consists of up to 5 test articles. Increment 2 and Increment 3 are currently unfunded in the FYDP.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) is a secure common memory loader verifier that loads operational flight programs to the weapon systems. . CAPRE leads the fleet on Cyber initiatives and is government owned and developed. CAPRE supports 32 USAF weapon systems including but not limited to A-10, B-1, B-52, C-5, C-17, C-130, CV-22, F-15, F-16, H-60 and KC-46.

RDT&E effort includes developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. RDT&E effort also includes software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force that minimizes cyber vulnerabilities in weapon systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Bomber Armament Tester	14.422	19.062	11.878
Description: New Common Bomber Armament Tester for B-1, B-2, and B-52.			
FY 2016 Accomplishments: Acquisition Strategy Plan approved per AFPEO/Agile Combat Support on November 12, 2015. Request for proposal was released May 2016.			
FY 2017 Plans:			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017	
Appropriation/Budget Activity 3600 I 5	**R-1 Program Element (Number/Name)** PE 0701212F I *Automated Test Systems*	**Project (Number/Name)** 6506TE I *Test And Evaluation Support Budget Authority*	

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2 - Requirements analysis for increments 1 and 2. This will include the most complex B-1 and B-52 test program set development. ***FY 2018 Plans:*** - Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2 - Requirements analysis for increments 1 and 2. This will include the most complex B-1 and B-52 test program set development.			
Title: CAPRE **Description:** Development of a common cyber secure Memory Loader Verifier for the Air Force. ***FY 2018 Plans:*** Complete Network Interface Module (NIM) development and complete prototyping. Start development of Software for NIM and other weapons system transition.	-	-	6.650
Accomplishments/Planned Programs Subtotals	14.422	19.062	18.528

C. Other Program Funding Summary ($ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 Acquisition Strategy for the Bomber Armament Tester (BAT) was approved by AFPEO/ Agile Combat Support on 12 November 2015 . The BAT program will use an incremental approach based on customer needs to satisfy this requirement. Increment 1 includes the development of the core test set, the B-2A requirements and development of the most complex B-1B and B-52 test program sets. Increment 2 consist of the B-1B development and Increment 3 consists of the B-52H requirements. Currently increments 2 and 3 are unfunded through the FYDP. The BAT program will utilize full and open competition to award the contract. Contract award is anticipated in June 2017.

 The Acquisition strategy for CARPE is to use the original government manufacturer to develop the NIM , software and hardware development. Acquisition Strategy for CAPRE has not been formally approved by Milestone Decision Authority.

Exhibit R-2A, **RDT&E Project Justification:** FY 2018 Air Force		**Date:** May 2017
Appropriation/Budget Activity 3600 *I* 5	**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*	**Project (Number/Name)** 6506TE *I Test And Evaluation Support Budget Authority*

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.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force													Date: May 2017	
Appropriation/Budget Activity 3600 *I* 5							**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*						**Project (Number/Name)** 6506TE *I Test And Evaluation Support Budget Authority*	

Product Development ($ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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**
CAPRE Development	TBD	Not specified. : TBD	-	0.000		0.000		6.300	Dec 2017	0.000		6.300	Continuing	Continuing	-
BAT Development	C/CPIF	Not specified. : TBD	-	11.383	Jun 2017	13.802	Jun 2017	7.444	Feb 2018	0.000		7.444	Continuing	Continuing	-
		Subtotal	-	11.383		13.802		13.744		0.000		13.744	-	-	-

Remarks

Product Development Cost include the development of the Bomber Armament Test Sets (Units under test Software, hardware and Technical Data), Technical Data and maintenance of Government Furnished Equipment.

Development efforts include developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. Development effort also include software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force.

Support ($ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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**
Logistic Support	C/CPIF	Not specified. : TBD	-	1.439	Jun 2017	3.160	Jul 2017	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	1.439		3.160		0.000		0.000		0.000	-	-	-

Remarks

Support Cost include Independent verification and validation support, Nuclear Certification Support and Cyber Security authority support.

Test and Evaluation ($ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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**
Development and Operation Testing support	C/CPIF	Not specified. : TBD	-	0.000		0.000		2.834	Jan 2019	0.000		2.834	Continuing	Continuing	-
		Subtotal	-	0.000		0.000		2.834		0.000		2.834	-	-	-

Exhibit R-3, **RDT&E Project Cost Analysis:** FY 2018 Air Force			**Date:** May 2017
Appropriation/Budget Activity 3600 *I* 5	**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*	**Project (Number/Name)** 6506TE *I Test And Evaluation Support*	

Budget Authority

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Environmental testing of the Bomber Armament Tester and operational testing of the test program sets for the B-2 and most complex B-1 and B-52

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BAT Travel	Various	Not specified. : TBD	-	0.100	Sep 2016	0.100	Sep 2017	0.100	Sep 2018	0.000		0.100	Continuing	Continuing	-
BAT Program Management Support	C/FFP	Not specified. : TBD	-	1.500	Jun 2016	2.000	Mar 2017	1.500	Mar 2018	0.000		1.500	Continuing	Continuing	-
CAPRE Travel	Various	Not specified. : TBD	-	0.000		0.000		0.050	Sep 2018	0.000		0.050	Continuing	Continuing	-
CAPRE Program Management Support	C/FFP	Not specified. : TBD	-	0.000		0.000		0.300	Jun 2018	0.000		0.300	Continuing	Continuing	-
Subtotal			-	1.600		2.100		1.950		0.000		1.950	-	-	-

Remarks

PMA costs include travel to support the development of the Bomber Armament Tester. PMA cost also include an Information Assurance expert and Assistance and advisory service contractors to provide support to the program office during the development of the program.The program element may include necessary civilian pay expenses required to manage, execute and deliver Automatic Test System capability.

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	14.422	19.062	18.528	0.000	18.528	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0701212F / *Automated Test Systems*	**Project (Number/Name)** 6506TE / *Test And Evaluation Support Budget Authority*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
BAT Request for Proposal Release			■																									
BAT Milestone B Decision						■																						
BAT Contract Award						■																						
BAT Inital Nuclear Cerification Impact Statement									■																			
BAT System Functional Review									■																			
BAT Preliminary Design Review										■																		
BAT Critical Design Review											■																	
BAT System Verification Review													■															
BAT Developmental Testing													■															
BAT Operational Testing													■															
BAT Final Nuclear Certification Impact Statement												■																
BAT Completed Prototype												■																
BAT Authority To Operate Issued													■															
BAT Operational Test and Readiness Review													■															
BAT Physical Confiiguration Audit													■															
BAT Production Readiness Review															■													
BAT Milestone C Decision															■													
CAPRE NIM Initial prototyping								■	■																			
CAPRE CDR									■																			
CAPRE NIM Baseline Design/Drawing and Software										■	■																	
CAPRE Software Development (Weapon Sytem Transition)								■	■	■	■	■	■	■														

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 *I* 5	**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*	**Project (Number/Name)** 6506TE *I Test And Evaluation Support*

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	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	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
Cable Design									██	██	██	██	██	██														

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		**Date:** May 2017
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 0701212F / *Automated Test Systems*	**Project (Number/Name)** 6506TE / *Test And Evaluation Support Budget Authority*

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BAT Request for Proposal Release	3	2016	3	2016
BAT Milestone B Decision	3	2017	3	2017
BAT Contract Award	3	2017	3	2017
BAT Inital Nuclear Cerification Impact Statement	2	2018	2	2018
BAT System Functional Review	2	2018	2	2018
BAT Preliminary Design Review	3	2018	3	2018
BAT Critical Design Review	4	2018	4	2018
BAT System Verification Review	2	2019	2	2019
BAT Developmental Testing	2	2019	2	2019
BAT Operational Testing	2	2019	2	2019
BAT Final Nuclear Certification Impact Statement	4	2018	4	2018
BAT Completed Prototype	4	2018	4	2018
BAT Authority To Operate Issued	2	2019	2	2019
BAT Operational Test and Readiness Review	2	2019	2	2019
BAT Physical Confiiguration Audit	2	2019	2	2019
BAT Production Readiness Review	3	2019	3	2019
BAT Milestone C Decision	3	2019	3	2019
CAPRE NIM Initial prototyping	1	2018	3	2018
CAPRE CDR	3	2018	3	2018
CAPRE NIM Baseline Design/Drawing and Software	3	2018	2	2019
CAPRE Software Development (Weapon Sytem Transition)	1	2018	4	2019
Cable Design	1	2018	4	2019

Exhibit R-4A, **RDT&E Schedule Details:** FY 2018 Air Force		**Date:** May 2017
Appropriation/Budget Activity 3600 *I* 5	**R-1 Program Element (Number/Name)** PE 0701212F *I Automated Test Systems*	**Project (Number/Name)** 6506TE *I Test And Evaluation Support Budget Authority*

Note

 Schedule reflects increment one EMD. Increments two and three are currently unfunded.

 CAPRE is government designed and development. Plan is to have original government manufacturer to handle this development effort.