

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>
---	--

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	-	21.507	46.540	58.590	0.000	58.590	13.043	6.197	6.597	6.717	Continuing	Continuing
651033: <i>Sensor Fuzed Weapon</i>	-	0.000	32.092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
653133: <i>Bombs & Fuzes</i>	-	12.079	9.592	53.692	0.000	53.692	8.054	1.122	1.416	1.442	Continuing	Continuing
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	4.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.336
655361: <i>Stores-Aircraft Interface</i>	-	5.092	4.856	4.898	0.000	4.898	4.989	5.075	5.181	5.275	Continuing	Continuing

Note

This program, BA 5, PE 0604602F, project 653133, Joint Air-to-Ground Missile for Fixed Wing (JAGM-F), is a new start.

A. Mission Description and Budget Item Justification

The Armament/Ordnance Development program provides for the development and integration of advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); initial and continuing development of weapons, munitions, and munitions equipment for aircraft integration, support, and operation use. This program develops, characterizes, and improves current, future, and legacy munitions, ammunitions, and subsystems.

653133: The Bombs & Fuzes (Armament Subsystems) develops and integrates advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); and improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS). The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes. Bombs and fuzes provides research, development and testing of conventional warhead, fuzing, and HOBS modifications to improve lethality against area, mobile, hard and deeply buried, and fixed targets, to include anti-personnel anti-materiel (APAM) targets. This project provides for the development and testing necessary to provide a suitable manufacturing base of conventional warheads, fuzes, HOBS and munitions materiel handling equipment (MMHE).

655361: Stores-Aircraft Interface: This project conducts stores-aircraft interface upgrades and standards development to include the Universal Armament Interface (UAI). UAI is an Air Force initiative to develop standardized software interfaces in aircraft weapons and Mission Planning. UAI standardizes software interfaces to support integration of weapons independent of aircraft Operational Flight Programs (OFP) cycles. UAI is currently being implemented on the F-15E, F-16 Block 40/50 and EAPAF (European Participating Air Forces) F-16 aircraft, Small Diameter Bomb (SDB) I and II, Joint Direct Attack Munition (JDAM), Laser JDAM, Joint Air-to-Surface Stand-off Missile (JASSM) and Precision Guided Munitions Planning Software (PGMPS). Additional aircraft and weapons, including but not limited to, Joint Strike Fighter (JSF/ F-35), B-1, B-52, B-21, MQ-9, JASSM-ER, CWDS as well as Army and Navy UAVs and Navy F/A-18s, have program plans to implement UAI. The UAI program office is responsible for development and enhancement of the standard (U.S. and allied) support to coalition/allied/joint interoperability efforts for weapons-platform interface efforts, provision of certification tools and implementation support to aircraft and weapons.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>
---	--

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Armament/Ordnance Development weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	20.312	46.540	75.547	0.000	75.547
Current President's Budget	21.507	46.540	58.590	0.000	58.590
Total Adjustments	1.195	0.000	-16.957	0.000	-16.957
• 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	1.917	0.000			
• SBIR/STTR Transfer	-0.722	0.000			
• Other Adjustments	0.000	0.000	-16.957	0.000	-16.957

Change Summary Explanation

FY2019, decrease of \$41M from Sensor Fuzed Weapon-ER, BPAC 651033 realigned to higher AF priorities.
 FY2019, decrease of \$7.5M from Bombs and Fuzes, BPAC 653133, transferred to Stand-In Attack Weapon, PE 0207328F.
 FY2019, additional \$31.596M for Bombs and Fuzes, BPAC 653133, for JAGM-F

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 651033 / <i>Sensor Fuzed Weapon</i>
--	--	---

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
651033: <i>Sensor Fuzed Weapon</i>	-	0.000	32.092	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

Effort to develop a wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Sensor Fuzed Weapon-Extended Range (SFW-ER)	0.000	32.092	0.000	-	0.000
Description: Effort to develop a wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.					
FY 2018 Plans: Develop wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.					
FY 2019 Base Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding realigned in FY19 to support higher Air Force priorities.					
Accomplishments/Planned Programs Subtotals	0.000	32.092	0.000	-	0.000

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

N/A

Remarks

D. Acquisition Strategy

Develop wing kit to extend the range of inventory Cluster Bomb Unit-105 (CBU-105) anti-tank area attack weapons.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0604602F / Armament/Ordnance Development				651033 / Sensor Fuzed Weapon							
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
Design Development	TBD	Not specified. : NV	-	-		17.330		-		-		-	Continuing	Continuing	-
Subtotal			-	-		17.330		-		-		-	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 Management Administration	TBD	Not specified. : NV	-	-		0.802		-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.802		-		-		-	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
Modeling and Simulation	TBD	Not specified. : NV	-	-		13.158		-		-		-	Continuing	Continuing	-
Subtotal			-	-		13.158		-		-		-	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
Contract Support	TBD	Not specified. : NV	-	-		0.802		-		-		-	Continuing	Continuing	-
Subtotal			-	-		0.802		-		-		-	Continuing	Continuing	N/A
Project Cost Totals			-	-		32.092		-		-		-	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 651033 / <i>Sensor Fuzed Weapon</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

Sensor Fuzed Weapon	
Development /Testing	██████████

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 651033 / <i>Sensor Fuzed Weapon</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Sensor Fuzed Weapon				
Development /Testing	1	2018	4	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
--	--	---

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
653133: <i>Bombs & Fuzes</i>	-	12.079	9.592	53.692	0.000	53.692	8.054	1.122	1.416	1.442	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 5, PE 0604602F, project 653133, Joint Air-to-Ground Missile for Fixed Wing (JAGM-F), is a new start.

A. Mission Description and Budget Item Justification

The Bombs & Fuzes (Armament Subsystems) develops and integrates advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.); and improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS). The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes. Bombs and fuzes provides research, development and testing of conventional warhead, fuzing, and HOBS modifications to improve lethality against area, mobile, hard and deeply buried, and fixed targets, to include anti-personnel anti-materiel (APAM) targets. This project provides for the development and testing necessary to provide a suitable manufacturing base of conventional warheads, fuzes, HOBS and munitions materiel handling equipment (MMHE).

- Munitions Materiel Handling Equipment (MMHE): MMHE is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.

- Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting 25mm (F-35) qualification testing, comparative testing and mitigate ammunition inventory health issues.

- Insensitive Munitions (IM): Supports AF IM strategic planning to achieve IM compliance IAW U.S. Code, Title 10, Subtitle A, Part N, Chapter 141, Section 2389, ensuring safety regarding insensitive munitions. Models and validates munition performance, integrates less sensitive explosive fills, addresses IM explosive fill deficiencies, and develops bomb case modifications to improve the response of conventional weapons to unplanned stimuli. Explores and develops IM solutions.

- Next Generation Area Attack Weapons (NGAAWs) are a family of unitary area attack weapon capabilities to meet the DoD policy on cluster munitions. They consist of BLU-134/B and BLU-136/B warheads with a height of burst sensor. BLU-134/B, Improved Lethality Warhead (ILW), Next Generation Area Attack Weapon Increment I is an area attack employed, near-term solution, 500 lb warhead for improved anti-personnel anti-materiel (APAM) target lethality. BLU-136/B NGAAW Inc II continues development to improve lethality against area targets to include APAM targets via an accelerated acquisition strategy. This effort studies, designs, develops and tests a warhead design which significantly improves lethality against APAM while meeting current DoD policy on cluster munitions and unintended harm to civilians.

- Cockpit-selectable Height-Of-Burst Sensor (C-HOBS): Development activities for fuzes and HOBS.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force	Date: February 2018
---	----------------------------

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
--	--	---

- Joint Air-to-Ground Missile for Fixed Wing Aircraft (JAGM-F) is an improvement to the Army's JAGM which will allow the missile to be released from fixed wing aircraft in order to eliminate time sensitive moving targets and high value covered/sheltered targets. JAGM-F will be able to combat adverse weather/low visibility battlefield and countermeasure environments and austere communication environments and have the ability to engage multiple target types near simultaneously in multiple engagement modes. Efforts include but are not limited to testing, qualification, and design/build demo components to production standards. Intent is to meet all BRU-55, BRU-57, and BRU-61 environments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Armament/Ordnance Development weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Title: Munitions Materiel Handling Equipment (MMHE)</p> <p>Description: MMHE. Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.</p> <p>FY 2018 Plans: Completed 20 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated 12 prototypes for test and evaluation purposes. Completed 17 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provided support to all system program offices with new weapons and aircraft configurations, as needed. Continued support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Provided support to the B-21 program office with evaluations and recommendations for equipment to aid safe munitions loading and handling of various pylons and adapters. Provided support to DARPA with designs and manufacturing of equipment to aid safe munitions loading and handling of Hypersonic weapons. Continued support and sustainment of all previously existing items developed by the MMHE program office. Continued to provide MMHE Sustainment office at Robins AFB with engineering support.</p> <p>FY 2019 Base Plans: Complete 20 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 15 prototypes for test and evaluation purposes. Complete 15 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed.</p>	0.674	0.692	0.696	0.000	0.696

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue to support the B-21 program office with evaluations and recommendations for equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support to DARPA with designs and manufacturing of equipment to aid safe munitions loading and handling of Hypersonic weapons. Continue support and sustainment of all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Additional funds to fabricate more prototypes, while decreasing the number of first articles produced.					
Title: Medium Caliber Ammunition Description: The Medium Caliber ammunition efforts support the warfighter's medium caliber ammunition research, development, test, and evaluation (RDT&E) requirements, DoN/USAF collaboration for the medium caliber family of ammunition, foreign comparative testing, inventory health challenges, procurement of ammunition, and other emerging technologies. FY 2018 Plans: Provided engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Continued to assess and mitigate Medium Caliber ammunition inventory health challenges. FY 2019 Base Plans: Continue to provide engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Continue to assess and mitigate Medium Caliber ammunition inventory health challenges. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: N/A	0.100	0.100	0.100	0.000	0.100
Title: Insensitive Munitions (IM)	0.314	0.300	0.300	0.000	0.300

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Model and validate munition performance; assess and correct IM deficiencies; explore and develop new IM technology; conduct strategic IM planning for the AF; support Joint Service IM efforts; provide technical guidance and test expertise to AF IM programs.</p> <p>FY 2018 Plans: Executed the Insensitive Munitions Strategic Plan (IMSP) and Plan of Action and Milestones (POAM). Modeled and validated munition performance; supported DoD and Joint Service IM planning; provided IM planning expertise to individual AF programs and continued to improve, characterize, and integrate less sensitive explosive fills, assessed and corrected identified IM explosive fill deficiencies, and developed bomb case modifications to improve the response of conventional weapons to unplanned stimuli.</p> <p>FY 2019 Base Plans: Execute the Insensitive Munitions Strategic Plan (IMSP) and Plan of Action and Milestones (POAM). Model and validate munition performance; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs and continue to improve, characterize, and integrate less sensitive explosive fills, assess and correct identified IM explosive fill deficiencies, and develop bomb case modifications to improve the response of conventional weapons to unplanned stimuli.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: N/A</p>					
<p>Title: BLU-136/B Next Generation Area Attack Weapon Inc II (NGAAW II)</p> <p>Description: The Next Generation Area Attack Weapon Increment II continues development to improve lethality against area targets to include anti-personnel anti-materiel (APAM) targets via an accelerated acquisition strategy. This effort studies, designs, develops and tests a warhead design which significantly improves lethality against APAM while meeting current DoD policy on cluster munitions and unintended harm to civilians.</p> <p>FY 2018 Plans:</p>	7.633	0.000	0.000	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force				Date: February 2018	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>		Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
Continued Government RDT&E of BLU-136/B. Continued warhead design TMRR, EMD, and qualification of Next Generation Area Attack Weapon Increment II, in preparation for production. Completed Critical Design Review. Continued planning for NGAAW pre-planned product improvements (P3I).					
FY 2019 Base Plans: Continue Government RDT&E of BLU-136/B. Continue warhead design TMRR, EMD, and qualification of Next Generation Area Attack Weapon Increment II, in preparation for production. Complete developmental testing prior to production. Continued planning for NGAAW pre-planned product improvements (P3I).					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: N/A					
Title: BLU-134/B Improved Lethality Warhead (ILW), Next Generation Area Attack Weapon Inc I					
Description: This Next Generation Area Attack Weapon (NGAAW Inc I), formerly known as Improved Lethality (IL), continues and expands development planning and legacy warhead efforts to improve lethality against area targets, to include anti-personnel anti-material (APAM) targets. This effort studies, designs, develops and tests warhead and fuzing modifications which improve lethality against APAM while meeting current DoD policy on cluster munitions and unintended harm to civilians. These improvements may be synergistic with maintaining a suitable manufacturing base. This effort was a new start in Project 653133, Bombs & Fuzes, in FY15.					
FY 2018 Plans: Continued Government RDT&E of BLU-134/B ILW. Continued warhead design TMRR, EMD, and qualification of Next Generation Area Attack Weapon Increment II, in preparation for production. Continued planning for NGAAW pre-planned product improvements (P3I).					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					
	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
	2.858	0.000	0.000	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
<p>Title: Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS)</p> <p>Description: Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS): The C-HOBS sensor will be a replacement for the DSU-33D/B proximity sensor. The form and fit of the C-HOBS shall be similar to the form and fit of the DSU-33D/B; however, the modification shall include the addition of multiple height-of-burst options selectable via both manual switches and via an RS-422 interface, eliminating single factory height-of-burst setting. These selection options allow flexibility during flight to address a wide array of targets. The C-HOBS Sensor is intended to interface with and provide general and special purpose weapons with a proximity function.</p> <p>FY 2018 Plans: Supported development contract source selection activities. Began Engineering and Manufacturing Development (EMD) Phase with focus on Integrated System Design. Completed activities leading up to and including Systems Requirements Review (SRR), followed by preparatory actions required to execute Preliminary Design Review (PDR) in FY19.</p> <p>FY 2019 Base Plans: Continue design and development effort; design and qualification test; and integration work. Conduct government/industry reviews to include: Systems Requirement Review (SRR) completion, initiation and closure of Preliminary Design Review (PDR) and Critical Design Review (CDR), and the initiation of Test Readiness Review (TRR). Evaluate production representative articles and prepare Initial Product Baseline and Product Support Plan. Complete a Post Critical Design Review Assessment based on test results for the Milestone Decision Authority (MDA) in preparation of a Milestone C and Production Decision in FY20.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Additional funds are needed to continue Engineering and Manufacturing Development (EMD) phase as well as to support the Developmental Test and Evaluation (DT&E) phase of the program.</p>	0.000	8.500	21.000	0.000	21.000
<p>Title: Advanced Precision Kill Weapon System II Rotary Wing Plus (APKWS II RW+)</p> <p>Description: Integrate rotary wing rocket (2.75-inch), M151 warhead (Frag) with a new BAE laser guidance system on A-10/F-16.</p>	0.500	0.000	0.000	0.000	0.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</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>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• PAAF 01 Line Item 353020: <i>General Purpose Bombs</i>	0.000	81.573	85.000	-	85.000	87.000	0.000	-	-	0.000	253.573
• PAAF 01 Line Item 356120: <i>Fuzes</i>	-	-	-	-	-	20.400	31.400	29.300	-	Continuing	Continuing
• PAAF 01 Line Item 352010: <i>Cartridges</i>	8.000	4.000	14.150	-	14.150	14.270	14.440	14.640	14.860	Continuing	Continuing

Remarks

D. Acquisition Strategy

- Fuzes (including C-HOBS) is a continuing effort with most activities performed through contracted services.
- Munitions Materiel Handling Equipment (MMHE) project activities are performed in-house with limited technical and analysis contract support.
- Medium Caliber ammunition project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).
- Insensitive Munitions project activities are performed in-house with limited technical and analysis contract support.
- The BLU-136/B NGAAW II warhead design program will implement an accelerated acquisition program strategy. The strategy includes concurrent TMRR and development of warhead designs and building and testing prototypes to develop a final technical data package (TDP). The TDP will be used to compete production for the low-rate initial production and follow-on warhead production. The NGAAW program will continue pre-planned product improvements.
- Joint Air-to-Ground Missile for Fixed Wing Aircraft (JAGM-F) will utilize the Defense Ordnance Technology Consortium (DOTC) contract combined with modeling and simulation contract support and government test support.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
--	--	---

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
IM	Various	Various : TBD	-	-		0.300	Mar 2018	0.300	Mar 2019	-		0.300	Continuing	Continuing	-
MMHE -- Prototypes	PO	Prototype Fabrication Shop : Eglin AFB, FL	-	0.206	Apr 2017	0.082	Apr 2018	0.086	Apr 2019	-		0.086	Continuing	Continuing	-
BLU-134/B ILW Development	C/FFP	AMW/GD-OTS : Various	-	0.000	Aug 2017	-		-		-		-	Continuing	Continuing	6.040
BLU-134/B / BLU-136 ILW - NGAAW Concept Development	Various	Various : Eglin AFB, FL	-	1.718	May 2017	-		-		-		-	Continuing	Continuing	-
BLU-134/B ILW - Mission Planning	Reqn	EBDW-WPS : Eglin AFB, FL	-	0.550	Jan 2018	-		-		-		-	Continuing	Continuing	0.748
CHOBS - HW/SW Selectability	C/Various	Various : Eglin AFB, FL	-	-		5.955	Aug 2018	16.385	Jan 2019	-		16.385	Continuing	Continuing	-
JAGM-F	C/FFP	DOTC : Huntsville, AL	-	0.000		0.000		25.000	Jan 2019	-		25.000	Continuing	Continuing	-
Subtotal			-	2.474		6.337		41.771		-		41.771	Continuing	Continuing	N/A

Remarks
BLU-134/B ILW awarded contracts to General Dynamics Ordnance and Tactical Systems (GD-OTS) and Allied Mechanical Wisconsin (AMW) for the development of the 500lb, CDI warhead in June 2016. NGAAW concept development continues.

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
MMHE -- Shipping/Supplies	Various	MMHE Program Office : Eglin AFB, FL	-	0.175	Mar 2017	0.130	Mar 2018	0.130	Mar 2019	-		0.130	Continuing	Continuing	-
Subtotal			-	0.175		0.130		0.130		-		0.130	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
--	--	---

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medium Caliber	TBD	Various : Various	-	-		-		-		-		-	Continuing	Continuing	-
IM	MIPR	NAWC : China Lake, CA	-	0.314	Dec 2016	-		-		-		-	Continuing	Continuing	-
BLU-134/B / BLU-136 ILW - Test and Evaluation	PO	Various : Various	-	7.353	May 2017	-		-		-		-	Continuing	Continuing	6.530
APKWS - Test and Evaluation	RO	Various : Various	-	0.500		-		-		-		-	Continuing	Continuing	-
CHOBS - Test and Evaluation	C/Various	Various : Various	-	-		1.650	Oct 2018	2.700	Mar 2019	-		2.700	Continuing	Continuing	-
MMHE -- Test Support	PO	96 TW : Eglin AFB, FL	-	-		0.040	Apr 2018	0.040	Apr 2019	-		0.040	Continuing	Continuing	-
JAGM-F - Test Support	PO	Various : Various	-	-		-		4.596	Sep 2019	-		4.596	Continuing	Continuing	-
Subtotal			-	8.167		1.690		7.336		-		7.336	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medium Caliber - PMA	Various	Various : Eglin AFB, FL	-	0.100	Jun 2017	0.100	Jun 2018	0.100	Jun 2019	-		0.100	Continuing	Continuing	-
MMHE - PMA	Various	Various : Eglin AFB, FL	-	0.293	Aug 2017	0.440	Jun 2018	0.440	Jun 2019	-		0.440	Continuing	Continuing	-
BLU-134/B ILW PMA	Various	Various : NV	-	0.870	Sep 2017	-		-		-		-	Continuing	Continuing	-
CHOBS -- PMA	Various	Various : Eglin AFB, FL	-	-		0.895	Apr 2018	1.915	Oct 2018	-		1.915	Continuing	Continuing	-
JAGM-F - PMA	Various	Various : Eglin AFB, FL	-	-		-		2.000	Oct 2018	-		2.000	Continuing	Continuing	-
Subtotal			-	1.263		1.435		4.455		-		4.455	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force								Date: February 2018			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>				Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>			
	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	-	12.079	9.592	53.692	-	53.692	Continuing	Continuing	N/A		

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</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

Bombs and Fuzes	
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	
Execute IMSP POAM	
BLU-134/B ILW Mold Design, Build, Test	
BLU-136/B- Warhead Design / Initial Prototype	
CHOBS --RFP/Contract Prep/Source Selection	
CHOBS -- Contract Award	
CHOBS -- Integration and Qualification	
Medium Caliber Ammunition: Assess, refine and develop medium caliber ammunition	
JAGM-F - Contract Award	
JAGM-F - Design, Build, Test, and Integration	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Bombs and Fuzes</i>				
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	1	2017	4	2022
Execute IMSP POAM	1	2017	4	2023
BLU-134/B ILW Mold Design, Build, Test	3	2017	3	2018
BLU-136/B- Warhead Design / Initial Prototype	1	2017	4	2019
CHOBS --RFP/Contract Prep/Source Selection	1	2018	4	2018
CHOBS -- Contract Award	4	2018	4	2018
CHOBS -- Integration and Qualification	4	2018	3	2020
Medium Caliber Ammunition: Assess, refine and develop medium caliber ammunition	1	2017	4	2022
JAGM-F - Contract Award	1	2019	2	2019
JAGM-F - Design, Build, Test, and Integration	1	2019	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development			Project (Number/Name) 653134 / BLU-109 and BLU-113 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
653134: BLU-109 and BLU-113 Upgrade	-	4.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.336
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced BLU-109 project develops and integrates advanced precision, navigation, and timing (PNT) capabilities (i.e., GPS, non-GPS, optical, passive, active, etc.) and demonstrates advancements in capability of the legacy penetrator warhead, enabling it to hold more targets at risk than currently achievable with the legacy weapon. The initial effort focused on demonstrating an Advanced 2000 lb (A2K), designated the BLU-137/B, warhead in a relevant military environment. The follow-on effort will provide production assets as a replacement warhead for the BLU-109 C/B warhead.

BLU-113 D/B incorporates BLU-137/B based design modifications to improve BLU-113 performance.

The Advanced 5000 lb Penetrator (A5K) risk reduction efforts started in the PE 0604602F/Armament/Ordnance Development 653134/BLU-109 and BLU-113 Upgrade but funding for the A5K development effort transitioned to PE 0604327F/Hard and Deeply Buried Target Defeat System (HDBTDS)Program 645341/Direct Strike Penetrator Systems in FY18.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced 2000 lb (A2K) Penetrator and Advanced 5000 lb (A5K) Penetrator Programs	4.336	0.000	0.000	-	0.000
Description: Conduct A2K and A5K design analysis, warhead modifications, and testing to improve BLU-109/113 performance against increasingly hardened targets. A2K will maintain the current BLU-109 mold lines and will attempt to maintain current BLU-109 mass properties and Insensitive Munitions (IM) characteristics. Finalize new technical drawing package and manufacturing readiness for A2K warhead and replace BLU-109 C/B warhead production with A2K warhead.					
FY 2018 Plans: N/A					
N/A					
FY 2019 Base Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 Upgrade</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A					
Accomplishments/Planned Programs Subtotals	4.336	0.000	0.000	-	0.000

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
• PAAF 01 353020: <i>GP Bombs</i>	35.000	35.000	35.000	-	35.000	35.000	75.000	75.000	-	Continuing	Continuing
• RDTE 04 PE 0604327F: <i>HDBTDS</i>	-	17.365	72.039	-	72.039	-	-	-	-	Continuing	Continuing

Remarks
N/A

D. Acquisition Strategy
The A2K/A5K project will provide a BLU-109/BLU-113 modification package to enable a fielding recommendation.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0604602F / Armament/Ordnance Development				653134 / BLU-109 and BLU-113 Upgrade							
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Design Engineering and Test Assets	Various	Various : NV	-	3.000	Feb 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	3.000		-		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Data	PO	Various : Eglin, FL	-	0.541	Mar 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.541		-		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Test and Evaluation	Various	Various : Various	-	0.526	Aug 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.526		-		-		-		-	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration/Program Support	Various	Various : Various	-	0.269	Oct 2016	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.269		-		-		-		-	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 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
A2K/A5K																												
A2K: Risk Reduction and Demonstration/Qualification																												
Mfg and Tech Data Package																												
Insensitive Munitions Test																												
Build Assets																												
OT Flight Test																												
A5K: Risk Reduction -- Modeling and Simulation																												
A5K: Risk Reduction -- Test and Qualification																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 Upgrade</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
A2K/A5K				
A2K: Risk Reduction and Demonstration/Qualification	1	2017	2	2017
Mfg and Tech Data Package	1	2017	2	2017
Insensitive Munitions Test	1	2017	4	2017
Build Assets	1	2017	1	2017
OT Flight Test	3	2017	4	2018
A5K: Risk Reduction -- Modeling and Simulation	1	2017	2	2017
A5K: Risk Reduction -- Test and Qualification	2	2017	2	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>				Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>			
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
655361: <i>Stores-Aircraft Interface</i>	-	5.092	4.856	4.898	0.000	4.898	4.989	5.075	5.181	5.275	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Stores-Aircraft Interface: This project conducts stores-aircraft interface upgrades and standards development to include the Universal Armament Interface (UAI). UAI is an Air Force initiative to develop standardized software interfaces in aircraft weapons and Mission Planning. UAI standardizes software interfaces to support integration of weapons independent of aircraft Operational Flight Programs (OFP) cycles. UAI is currently being implemented on the F-15E, F-16 Block 40/50 and EPAF (European Participating Air Forces) F-16 aircraft, Small Diameter Bomb (SDB) I and II, Joint Direct Attack Munition (JDAM), Laser JDAM, Joint Air-to-Surface Stand-off Missile (JASSM) and Precision Guided Munitions Planning Software (PGMPS). Additional aircraft and weapons, including but not limited to, Joint Strike Fighter (JSF/F-35), B-1, B-52, B-21, MQ-9, JASSM-ER, CWDS as well as Army and Navy UAVs and Navy F/A-18s, have program plans to implement UAI. The UAI program office is responsible for development and enhancement of the standard (U.S. and allied) support to coalition/allied/joint interoperability efforts for weapons-platform interface efforts, provision of certification tools and implementation support to aircraft and weapons.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Armament/Ordnance Development weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: UAI Development	5.092	4.856	4.898	-	4.898
Description: Conduct stores-aircraft interface upgrades and standards development to the Universal Armament Interface (UAI) development and maintenance to the UAI, and facilitation of aircraft, stores and mission planning program users in the UAI process.					
FY 2018 Plans: Continue development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction assessments, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools to meet F-35, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Support					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>multinational Memorandum of Understanding including but not limited to Joint Strike Missile (JSM), SPEAR 3 and Stand Off Missile - Joint (SOM-J).</p> <p><i>FY 2019 Base Plans:</i> Continue development and configuration management of UAI standards in response to new users and evolving requirements including but not limited to F-35, JASSM-ER, CWDS, F/A-18, B-21, PGMPs and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction assessments, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools to meet F-35, SDB II, F/A-18, B-21 and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Support multinational Memorandum of Understanding including but not limited to Joint Strike Missile (JSM), SPEAR 3 and Stand Off Missile - Joint (SOM-J).</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Adjustment for inflation</p>					
Accomplishments/Planned Programs Subtotals	5.092	4.856	4.898	-	4.898

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

N/A

Remarks

N/A

D. Acquisition Strategy

In December 2004, under the authority of a class Justification and Approval (J&A), the UAI program office awarded individual Cost Plus Fixed Fee (CPFF) contracts to Boeing, Lockheed Martin, Northrop Grumman and Raytheon. Each Original Equipment Manufacturer is responsible for a different piece of the total UAI requirement based on its product-specific (platform/weapon) expertise. During FY10 these contracts expired. Under the authority of the class J&A, Cost Plus Incentive Fee (CPIF) contracts were awarded to the four UAI vendors in August 2010. Follow-on period of performance was awarded in March 2014 for 16 months to better align future contract awards with funding through the Future Years Defense Program. The current period of performance was extended to 1 November 2015 to allow immediate start of the effort on F-35/JSF request for changes. A new J&A was approved in January 2015 for the follow-on sole source contracts to the original equipment manufacturers. These new sole-source contracts awarded November 2015.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
--	--	---

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Interface Control Document (ICD) Development/Updates/Maintenance	SS/ Various	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	4.992	Nov 2016	4.656	Nov 2017	4.698		-		4.698	Continuing	Continuing	-
UAI Common Component	SS/CPIF	Northrop Grumman : Bethpage, NY	-	-		-		-		-		-	Continuing	Continuing	-
Certification Tool	SS/CPFF	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.992		4.656		4.698		-		4.698	Continuing	Continuing	N/A

Remarks
 --UAI Common Component has been rolled into the ICD Development line in 2016.
 --Existing certification tools will be obsolete in 2018. Development has begun for a prototype for updated certification tools.

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration/Program Support	Various	Various : Various	-	0.100		0.200		0.200		-		0.200	Continuing	Continuing	-
Subtotal			-	0.100		0.200		0.200		-		0.200	Continuing	Continuing	N/A

Remarks
 PE Systems Contractor provided support to the Program Office for financial services beginning Aug 14 and ongoing.

	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		-	5.092	4.856	4.898	-	4.898	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force	Date: February 2018
--	----------------------------

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
--	--	---

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

	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									

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Stores-Aircraft Interface				
ICD Development/Governance (SJICWG), (UAI funded)	1	2017	4	2022
Certification Tools (CTs) Dev / Update, (UAI funded)	1	2017	4	2022
UAI (Msn Plng) Common Component, (UAI funded)	1	2017	4	2021
F-15E (Program funded)	1	2017	4	2021
F-16, (Program funded)	1	2017	3	2021
JDAM, (Program funded)	1	2017	4	2021
JASSM-ER, (Program funded)	1	2017	3	2021
SDB II, (Program funded)	1	2017	4	2021
F-35, (Program funded)	1	2017	4	2021
B-1 (Program funded)	1	2017	4	2021
B-52 (Program funded)	1	2017	4	2021
BRU 61 A/A	1	2017	4	2021
BRU 57	1	2017	4	2021
ICD Development for UNI (Program funded)	1	2017	3	2017