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**Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	28.667	37.654	20.312	0.000	20.312	6.551	6.018	6.128	6.237	Continuing	Continuing
653133: <i>Bombs &amp; Fuzes</i>	-	7.850	18.219	11.066	0.000	11.066	1.064	1.085	1.104	1.124	Continuing	Continuing
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	14.027	13.936	4.496	0.000	4.496	0.645	0.000	0.000	0.000	Continuing	Continuing
655361: <i>Stores-Aircraft Interface</i>	-	6.790	5.499	4.750	0.000	4.750	4.842	4.933	5.024	5.113	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Armament/Ordnance Development program provides for initial and continuing development of weapons/munitions (kinetic and non-kinetic) and munitions equipment for support and operational use. This program develops and improves the following weapons and weapons subsystems: bombs, bomb fuzes (to include the FMU-152 and FMU-139 general purpose, commodity fuzes), BLU-109 and BLU-113 legacy penetrator development, insensitive munitions (IM) characteristics, aircraft ammunition, stores-aircraft interface upgrades to include the Universal Armament Interface (UAI), munitions materiel handling equipment (MMHE), munitions containers, and other weapon subsystems.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	29.112	40.154	20.412	0.000	20.412
Current President's Budget	28.667	37.654	20.312	0.000	20.312
Total Adjustments	-0.445	-2.500	-0.100	0.000	-0.100
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.500			
• 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	-0.445	0.000			
• Other Adjustments	0.000	0.000	-0.100	0.000	-0.100

**Change Summary Explanation**

FY2016 - Congressional direction reduced the program by \$2.5M for "Slow Execution".

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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653133: <i>Bombs &amp; Fuzes</i>	-	7.850	18.219	11.066	0.000	11.066	1.064	1.085	1.104	1.124	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Bombs & Fuzes (Armament Subsystems) Project develops and improves conventional weapons/munitions (kinetic and non-kinetic) and fuzes. 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 and fuzing modifications to improve lethality against area 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 and fuzes.

In addition, the project contains a variety of other work:

Bombs/munitions and fuzes:

- Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting 25mm (F-35) qualification testing.
- Follow-on development activities for legacy fuzes, including reliability enhancements and producibility improvements.
- Improved Lethality (IL): 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 effort in Project 653133, Bombs & Fuzes, in FY15.
- Insensitive Munitions (IM): IM develops less sensitive explosive fills and bomb case modifications to improve the response of conventional weapons to unplanned stimuli. The project also 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.
- 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.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<b>Title:</b> Munitions Materiel Handling Equipment (MMHE)	0.738	0.748	0.674	0.000	0.674
<b>Description:</b> 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					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force				<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 3600 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>		<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>					
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.					
<b>FY 2015 Accomplishments:</b> Completed 12 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated 12 prototypes for test and evaluation purposes. Completed 12 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 configuration, as needed. Continued support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. 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.					
<b>FY 2016 Plans:</b> Complete 14 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 14 prototypes for test and evaluation purposes. Complete 14 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. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustain all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support.					
<b>FY 2017 Base Plans:</b> Complete 11 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 14 prototypes for test and evaluation purposes. Complete 11 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. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustain all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support.					
<b>FY 2017 OCO Plans:</b> N/A					
<b>Title:</b> Medium Caliber Ammunition					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
	0.100	0.100	0.100	0.000	0.100



**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force			<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Initiate the FY19/20 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs.  <b>FY 2017 OCO Plans:</b> N/A					
<b>Title:</b> Improved Lethality (IL)  <b>Description:</b> Improve lethality against area targets, to include anti-personnel anti-materiel (APAM) targets. Improvements must meet current DoD policy on cluster munitions and unintended harm to civilians and may be synergistic with maintaining a suitable manufacturing base while also providing a possible solution for the Next Generation Area Attack Weapon (NGAAW).  <b>FY 2015 Accomplishments:</b> Expanded previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios which meet DoD policy on cluster munitions and unintended harm to civilians. Began BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B)source selection for an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. Began a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW).  <b>FY 2016 Plans:</b> Expand previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios while meeting DoD policy on cluster munitions and unintended harm to civilians. Start manufacturing development of BLU-134/B Improved Lethality Warhead (ILW) formerly called BLU-111D/ B of an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. In addition to meeting current DoD policy on cluster munition and unintended harm to civilians, improvements may be synergistic with maintaining a suitable manufacturing base. Continue a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW).  <b>FY 2017 Base Plans:</b> Expand previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios while meeting DoD policy on cluster munitions and unintended harm to civilians. Complete manufacturing development and begin Government testing (DT/OT)of BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B) of an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. In addition to meeting current DoD policy on cluster munition and unintended harm to civilians, improvements may be synergistic with maintaining a suitable	6.612	17.021	9.992	0.000	9.992

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
manufacturing base. Continue acquisition strategy and RFP development for a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW).					
<b>FY 2017 OCO Plans:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	7.850	18.219	11.066	0.000	11.066

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

<u>Line Item</u>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF: BA01: Line Item # 353020: <i>General Purpose Bombs</i>	0.000	0.000	80.000	0.000	80.000	81.573	85.000	87.000	0.000	0.000	0.000

**Remarks**  
The Improved Lethality (IL) effort continues and expands upon pre-FY15 developmental planning work accomplished in the Requirements Analysis and Maturation PE (0604337F).

- D. Acquisition Strategy**
- Fuzes (including the FMU-152) is a continuing effort with most activities performed in-house or through contracted services (small contracts).
  - Munitions Materiel Handling Equipment (MMHE) project activities are performed in-house with limited technical and analysis contract support.
  - Medium Caliber project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).
  - The BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B) qualification program will provide a materiel solution and possible modification packages that would precede efforts to achieve a full qualification and low rate initial production (LRIP) for an Improved Lethality Warhead (BLU-134/B).

**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 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
IM	TBD	Air Force Research Lab RWM : Eglin AFB, FL	-	0.170	Apr 2015	0.120	Apr 2016	0.080	Apr 2017	0.000		0.080	Continuing	Continuing	TBD
MMHE -- Prototypes	PO	Prototype Fabrication Shop : Eglin AFB, FL	-	0.415	May 2015	0.300	May 2016	0.300	May 2017	0.000		0.300	Continuing	Continuing	TBD
IL Phase I/II - Concept Development	C/FPIF	TBD-KTR : Eglin AFB, FL	-	4.971	Jan 2016	15.385	Aug 2016	4.540	Aug 2017	0.000		4.540	Continuing	Continuing	TBD
IL - Mission Planning	PO	TBD : Eglin AFB, FL	-	0.250	Mar 2016	0.748	Aug 2016	0.200	Mar 2017	0.000		0.200	Continuing	Continuing	TBD
<b>Subtotal</b>			-	5.806		16.553		5.120		0.000		5.120	-	-	-

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
MMHE-- Contract support	C/CPFF	A and AS : Eglin AFB, FL	-	0.126	Oct 2014	0.300	Oct 2015	0.200	Oct 2016	0.000		0.200	Continuing	Continuing	-
MMHE -- Program Office support	Various	AFLCMC/EBD : Eglin AFB, FL	-	0.197	Nov 2014	0.148	Nov 2015	0.174	Nov 2016	0.000		0.174	Continuing	Continuing	TBD
Medium Caliber Ammunition - Program Office support	TBD	AFLCMC EBSN : Eglin AFB, FL	-	0.100	Oct 2014	0.100	Oct 2015	0.100	Oct 2016	0.000		0.100	Continuing	Continuing	TBD
IL - Logistics Support	Various	Various : Various	-	0.200	Mar 2016	0.101	Aug 2016	0.125	Aug 2017	0.000		0.125	Continuing	Continuing	TBD
<b>Subtotal</b>			-	0.623		0.649		0.599		0.000		0.599	-	-	-

**Remarks**  
A&AS contractors provide support to the System Program Office (SPO) for technical and management/financial services.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects																																
Medium Caliber Ammunition: Assess, refine, and develop medium caliber ammunition																																
Submit AF FY17/18 Insensitive Munitions (IM) Strategic Plan																																
Submit AF FY19/20 Insensitive Munitions (IM) Strategic Plan																																
Submit AF FY21/22 Insensitive Munitions (IM) Strategic Plan																																
IL: Contract Prep/Source Selection																																
IL: Contract Award																																
IL: Mold Design, Build, Test																																
IL: Phase II, Modeling and Simulation																																
IL: Phase II, Next Generation Area Attack Weapon																																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653133 / <i>Bombs &amp; Fuzes</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	1	2015	4	2021
Medium Caliber Ammunition: Assess, refine, and develop medium caliber ammunition	1	2015	4	2021
Submit AF FY17/18 Insensitive Munitions (IM) Strategic Plan	2	2016	2	2016
Submit AF FY19/20 Insensitive Munitions (IM) Strategic Plan	2	2018	2	2018
Submit AF FY21/22 Insensitive Munitions (IM) Strategic Plan	2	2020	2	2020
IL: Contract Prep/Source Selection	4	2015	4	2016
IL: Contract Award	4	2016	4	2016
IL: Mold Design, Build, Test	4	2016	3	2018
IL: Phase II, Modeling and Simulation	3	2015	3	2016
IL: Phase II, Next Generation Area Attack Weapon	2	2016	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>				<b>Project (Number/Name)</b> 653134 / <i>BLU-109 and BLU-113 Upgrade</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	14.027	13.936	4.496	0.000	4.496	0.645	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

BLU-109 and BLU-113 Upgrade [Advanced BLU-109 and BLU-113 (A2K/A5K)\*A2K has been designated the BLU-137/B]: This project demonstrates advancements in capability of these two legacy penetrator warheads, enabling them to hold more targets at risk than currently achievable with legacy weapons. The initial effort will focus on demonstrating an advanced 2000 lb (A2K) warhead and an advanced 5000 lb (A5K) warhead in a relevant military environment. The follow-on effort will provide production assets as a replacement warhead for the BLU-109 warhead and at a later date the BLU-113 warhead.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<b>Title:</b> Advanced 2000 lb (A2K) Penetrator and Advanced 5000 lb (A5K) Penetrator Programs	14.027	13.936	4.496	0.000	4.496
<b>Description:</b> Conduct A2K & A5K design analysis, warhead modifications, and testing to improve BLU-109/113 performance against increasingly hardened targets. Designs will maintain the current BLU-109/113 mold lines and will attempt to maintain current BLU-109/113 mass properties and Insensitive Munitions (IM) characteristics. Finalize new technical drawing package and manufacturing readiness for A2K warhead and replace BLU-109 warhead production with A2K warhead.					
<b>FY 2015 Accomplishments:</b> Completed risk reduction and demonstration testing of A2K warhead case design. Continue to modify FMU 152 FZUs and cables, JDAM hardbacks, and warhead cases employed on the threshold platforms (B-2A & F-15E). Began manufacturing and technical data package study. Began A5K design analysis and modeling and simulation.					
<b>FY 2016 Plans:</b> Complete manufacturing and technical data package as well as conduct risk reduction and qualification testing of A2K design to include modified FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E). Fully qualify A2K warhead design for Production readiness. Continue developing A5K initial design and risk reduction testing.					
<b>FY 2017 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653134 / <i>BLU-109 and BLU-113 Upgrade</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Finalize qualification testing of A2K design to include modified FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E) and complete qualification of the A2K warhead design for Production readiness. Continue developing A5K initial design and risk reduction.  <i><b>FY 2017 OCO Plans:</b></i> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	14.027	13.936	4.496	0.000	4.496

<b>C. Other Program Funding Summary (\$ in Millions)</b>												
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	
• RDTE:BA04:PE 0604618F: <i>Joint Direct Attack Munition</i>	2.389	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

**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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
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							
<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Engineering and Test Assets	C/CPIF	Various : Various	-	8.891	Jan 2015	6.267	May 2016	2.270	Dec 2016	0.000		2.270	Continuing	Continuing	-
<b>Subtotal</b>			-	8.891		6.267		2.270		0.000		2.270	-	-	-
<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Data	PO	Various : Eglin, FL	-	0.000		0.150	Mar 2016	0.500	Mar 2017	0.000		0.500	Continuing	Continuing	-
<b>Subtotal</b>			-	0.000		0.150		0.500		0.000		0.500	-	-	-
<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Test and Evaluation	Various	Various : Various	-	4.695	Jan 2015	6.896	May 2016	1.320	Dec 2016	0.000		1.320	Continuing	Continuing	-
<b>Subtotal</b>			-	4.695		6.896		1.320		0.000		1.320	-	-	-
<b>Management Services (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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/Program Support	Various	Various : Various	-	0.441	Jun 2015	0.623	Feb 2016	0.406	Oct 2016	0.000		0.406	Continuing	Continuing	-
<b>Subtotal</b>			-	0.441		0.623		0.406		0.000		0.406	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Air Force								<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 3600 / 5				<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>				<b>Project (Number/Name)</b> 653134 / <i>BLU-109 and BLU-113 Upgrade</i>			
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	14.027		13.936		4.496	0.000	4.496	-	-	-

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 653134 / <i>BLU-109 and BLU-113 Upgrade</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
A2K: Risk Reduction and Demonstration/Qualification	1	2015	2	2017
- Arming Generator Relocation Adaptor and Case Preliminary Design Review	2	2015	2	2015
- Sled Tests	1	2015	4	2015
- Mfg and Tech Data Package	4	2015	2	2016
- Insensitive Munitions Test (SCO/FCO)	4	2015	4	2016
- DOTC A2K Contract Award	4	2015	4	2015
- Build Assets	4	2015	2	2016
- OT Flight Test	3	2016	3	2017
- LRIP/Full Rate Production	3	2017	4	2019
A5K: Risk Reduction -- Modeling and Simulation	3	2015	4	2018

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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655361: <i>Stores-Aircraft Interface</i>	-	6.790	5.499	4.750	0.000	4.750	4.842	4.933	5.024	5.113	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 to support integration of weapons independent of aircraft Operational Flight Program (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, LRS-B, MQ-9, JASSM-ER, CWDS as well as Army UAVs and Navy F/A-18 and UAVs, 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.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<b>Title:</b> UAI Development	6.790	5.499	4.750	0.000	4.750
<b>Description:</b> Conduct stores-aircraft interface upgrades and standards development to the Universal Armament Interface (UAI), development of and maintenance to the UAI, and facilitation of aircraft, stores and mission planning program users in the UAI process.					
<b>FY 2015 Accomplishments:</b> Continued development and configuration management of UAI standards in response to user needs, working group management, technical meetings and workshops, risk reduction studies, common mission planning, integration support and updates to test tools. Continued effort to update certification tools with miniature and micro munitions interface capability to meet F-35, SDB II and other future user system integration lab test certification needs. Started negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
<b>FY 2016 Plans:</b> 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 studies, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools and procure new					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
certification tools with miniature and micro munitions interface capability to meet F-35, B-1, B-52, 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. Continue negotiation implementation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
<b><i>FY 2017 Base Plans:</i></b> 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 studies, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools and procure new certification tools with miniature and micro munitions interface capability 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. Continue negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
<b><i>FY 2017 OCO Plans:</i></b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	6.790	5.499	4.750	0.000	4.750

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

**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

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>

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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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/CPIF	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	4.045	Nov 2014	2.099	Nov 2015	3.850	Nov 2016	0.000		3.850	Continuing	Continuing	TBD
UAI Common Component	SS/CPIF	Northrop Grumman : Bethpage, NY	-	1.475	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Certification Tool	SS/CPFF	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	0.600	Nov 2014	2.500	May 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
<b>Subtotal</b>			-	6.120		4.599		3.850		0.000		3.850	-	-	-

**Remarks**  
 --UAI Common Component will be rolled into the ICD Development line in 2016.  
 --Existing certification tools will be maintained. Development will begin for a prototype for updated certification tools.

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			
FM A&AS support	WR	MCR : Riverside, OH	-	0.070	Nov 2014	0.100	Dec 2015	0.100	Dec 2016	0.000		0.100	Continuing	Continuing	-
EN A&AS support	MIPR	ATAC : Eglin, FL	-	0.100	Dec 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
<b>Subtotal</b>			-	0.170		0.100		0.100		0.000		0.100	-	-	-

**Remarks**  
 MCR Contractor provided support to the Program Office for financial services beginning Aug 14.  
 EN Services are discontinued a/o Jul 15.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Air Force</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

ICD Development/Governance (SJICWG), (UAI funded)	[Redacted]																											
Certification Tools (CTs) Dev / Update, (UAI funded)	[Redacted]																											
UAI (Msn PIng) Common Component, (UAI funded)	[Redacted]																											
F-15E (Program funded)	[Redacted]																											
F-16, Program funded)	[Redacted]																											
JDAM, (Program funded)	[Redacted]																											
JASSM-ER, ((Program funded)	[Redacted]																											
SDB II, (Program funded)	[Redacted]																											
F-35, (Program funded)	[Redacted]																											
B-1 (Program funded)	[Redacted]																											
B-52 (Program funded)	[Redacted]																											
BRU 61 A/A	[Redacted]																											
BRU 57	[Redacted]																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604602F / <i>Armament/Ordnance Development</i>	<b>Project (Number/Name)</b> 655361 / <i>Stores-Aircraft Interface</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ICD Development/Governance (SJICWG), (UAI funded)	1	2015	4	2021
Certification Tools (CTs) Dev / Update, (UAI funded)	1	2015	4	2021
UAI (Msn Plng) Common Component, (UAI funded)	1	2015	4	2021
F-15E (Program funded)	1	2015	4	2021
F-16, (Program funded)	1	2015	3	2021
JDAM, (Program funded)	1	2015	4	2021
JASSM-ER, ((Program funded)	1	2015	3	2021
SDB II, (Program funded)	1	2015	4	2021
F-35, (Program funded)	3	2015	4	2021
B-1 (Program funded)	4	2015	4	2021
B-52 (Program funded)	4	2015	4	2021
BRU 61 A/A	1	2015	4	2021
BRU 57	2	2016	4	2021

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