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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

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>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	29.505	23.034	9.047	0.000	9.047	-	-	-	-	-	-
653133: <i>Bombs & Fuzes</i>	-	20.528	17.969	3.950	0.000	3.950	-	-	-	-	-	-
655361: <i>Stores-Aircraft Interface</i>	-	8.977	5.065	5.097	0.000	5.097	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Armament Ordnance Development program provides for the initial and continuing development of weapons, munitions, and munitions equipment for aircraft integration, support, and operational use. This program develops, characterizes, and improves current, future, and legacy munitions, ammunitions, and subsystems.

653133: The Bombs & Fuzes project improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS), and develops and integrates complementary position, navigation, and timing (PNT) capabilities (i.e. GPS, non-GPS, optical, passive, active, etc.). It also provides for the development and testing necessary for a suitable manufacturing base of conventional warheads, fuzes, HOBS, and munitions materiel handling equipment (MMHE). Bombs & Fuzes also provides research, development, testing and guidance of conventional warheads, fuzing, HOBS modifications, and anti-personnel anti-materiel (APAM) weapons to improve lethality against area, mobile, hard and deeply buried, and fixed targets. Finally, this project provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes and supports strategic planning to achieve compliance of AF munitions with Department of Defense insensitive munitions (IM) standards.

655361: The Stores-Aircraft Interface project is home to the Universal Armament Interface (UAI). UAI is the Air Force's common standard aircraft/weapon interface and is an acquisition requirement, to be used by all weapons and combat aircraft as practicable. The UAI program continues development and maintenance of the standardized interface including mission planning components. Users include Air Force, Army, and Navy customers. The UAI program office is also responsible for development, enhancement, and maintenance of the standard to support coalition, allied, and joint interoperability efforts for weapons-platform interface. These responsibilities include acquisition, upgrade, repair and provision of UAI certification tools, and implementation support to US Air Force, Army, Navy and allied aircraft and weapons systems. UAI provides cost/schedule savings over traditional integration efforts. This is accomplished by enabling integration of weapons independent of aircraft Operational Flight Programs (OFP) cycles.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0.135M is forecasted for civilian pay expenses in this program element.

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.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	28.043	23.076	9.183	0.000	9.183
Current President's Budget	29.505	23.034	9.047	0.000	9.047
Total Adjustments	1.462	-0.042	-0.136	0.000	-0.136
• Congressional General Reductions	0.000	-0.042			
• 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	1.500	0.000			
• SBIR/STTR Transfer	-0.038	0.000			
• Other Adjustments	0.000	0.000	-0.136	0.000	-0.136

Change Summary Explanation

FY20 Reprogramming funding was allocated to IM/Emerging Technologies

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force **Date:** May 2021

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>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
653133: <i>Bombs & Fuzes</i>	-	20.528	17.969	3.950	0.000	3.950	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Bombs & Fuzes project improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS), and develops and integrates complementary position, navigation, and timing (PNT) capabilities (i.e. GPS, non-GPS, optical, passive, active, etc.). This project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes. Bombs & Fuzes provides research, development, and testing of conventional warheads, fuzing, HOBS modifications, and anti-personnel anti-materiel (APAM) weapons to improve lethality against area, mobile, hard and deeply buried, and fixed 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 mitigating ammunition inventory health issues.

- Insensitive Munitions (IM) and Emerging Technologies: IM projects support 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 current 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. This project also explores and develops IM and Energetics technology, assessing, analyzing, and evaluating emerging and developed technologies for future and existing weapon and fuze capabilities to improve lethality, accuracy, and reliability in accordance with the National Defense Strategy roadmap.

- Next Generation Area Attack Weapons (NGAAWs) are a family of unitary area attack weapon capabilities to meet the DoD policy regarding cluster munitions and unintended harm to civilians. They consist of BLU-134/B and BLU-136/B warheads with a height of burst sensor. BLU-134/B Improved Lethality Warhead (ILW), NGAAW Increment I, is a near-term solution for area attack as an anti-personnel anti-materiel (APAM) weapon that improves lethality using a 500 lb warhead design and any variants. The BLU-136/B NGAAW Increment II continues development to provide significantly increased capability and lethality against area targets as an APAM weapon. This effort is being executed using an accelerated acquisition strategy to study, design, develop, and test a 2,000 lb unitary warhead design and any variants based on target sets.

- DSU-43/B Cockpit-selectable Height-Of-Burst Sensor (C-HOBS): The C-HOBS will be a replacement for the current DSU-33D/B proximity sensor. C-HOBS will replace the single factory height-of-burst setting with the addition of multiple height-of-burst options selectable via both manual switches and a cockpit interface. These selection

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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>
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options allow flexibility during flight to address a wide array of targets. The C-HOBS is intended to interface with Combat Air Forces (CAF) aircraft and provide proximity height-of-burst functionality to general and special purpose weapons (to include NGAAWs).

- Joint Air-to-Ground Missile for Fixed Wing Aircraft (JAGM-F) is an improvement to the Army-led JAGM, which will allow the missile to be ejected 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 as well as austere communication environments. JAGM-F will have the ability to engage multiple target types near-simultaneously in multiple engagement modes. Efforts include but are not limited to capability demonstration design, testing, and qualification, and manufacture/build components to production standards. Intent is to investigate meeting all BRU-55, BRU-70, and BRU-61 environments.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Title: Munitions Materiel Handling Equipment (MMHE)</p> <p>Description: 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 2021 Plans: Continue MMHE support projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate prototypes for test and evaluation purposes. Continue 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 with designs and manufacturing of 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 Defense Advanced Research Projects Agency (DARPA) with designs and manufacturing of equipment to aid safe munitions loading and handling of hypersonic weapons. Continue support for Air Force Research Laboratory on future munition concept demonstrators. Continue support and sustainment engineering of all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB, GA, with engineering support.</p> <p>FY 2022 Base Plans: Continue MMHE support projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate prototypes for test and evaluation purposes. Continue first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide</p>	0.774	0.614	0.664	-	0.664

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B. Accomplishments/Planned Programs (\$ in Millions)					
support to all system program offices with new weapons and aircraft configurations, as needed. Continue support to the F-35 with designs and manufacturing of 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 for Air Force Research Laboratory on future munition concept demonstrators. Continue support and sustainment engineering of all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB, GA, with engineering support.					
FY 2021 to FY 2022 Increase/Decrease Statement: FY2022 funding increased due to FY2021 MMHE funds utilization for higher priority bill and subsequent restoration to correct level in FY2022.					
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 2021 Plans: Continue to provide engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Initiate development of the 30mm replacement round. Assess and mitigate Medium Caliber ammunition inventory health challenges.					
FY 2022 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. Initiate development of the 30mm replacement round. Assess and mitigate Medium Caliber ammunition inventory health challenges.					
Title: Insensitive Munitions (IM) and Emerging Technology					
Description: Model and validate current munition performance; explore and develop IM and Energetics technology; assess, analyze, and evaluate emerging and developed technologies for future and existing weapon					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
	0.100	0.100	0.100	-	0.100
	1.666	2.200	0.300	-	0.300

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
and fuze capabilities to improve lethality, accuracy, and reliability in accordance with the National Defense Strategy roadmap. FY 2021 Plans: Provide modeling and engineering technical guidance and expertise for development of IM; assess, analyze, and evaluate developed technologies for future weapon capabilities. FY 2022 Base Plans: Provide modeling and engineering technical guidance and expertise for development of IM; assess, analyze, and evaluate emerging and developed technologies for future and existing weapon and fuze capabilities; support IM strategic planning. FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased due to higher Air Force priorities.					
Title: Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS) Description: DSU-43/B Cockpit-selectable Height-Of-Burst Sensor (C-HOBS). The C-HOBS will be a replacement for the legacy DSU-33D/B proximity sensor. C-HOBS will replace the single factory height-of-burst setting with the addition of multiple height-of-burst options selectable via both manual switches and a cockpit interface. These selection options allow flexibility during flight to address a wide array of targets. The C-HOBS is intended to interface with the weapon via the cockpit and provide a cockpit-selectable proximity function for general and special purpose weapons (to include Next Generation Area Attack Weapons, NGAAWs). FY 2021 Plans: Complete design and qualification tests; and integration work. Conduct government/industry reviews working towards completion of Milestone C efforts. Start LRIP and First Article Acceptance Testing with a Full-Rate Production Decision. Pending Milestone Decision Authority approval of Full-Rate Production (FRP), will start FRP. FY 2022 Base Plans: Complete design and qualification tests; and integration work. Conduct government/industry reviews working towards completion of Milestone C efforts. Start Low Rate Initial Production and First Article Acceptance Testing with a Full-Rate Production Decision. Pending MDA approval of FRP, will start full-rate production. FY 2021 to FY 2022 Increase/Decrease Statement:	3.210	14.995	2.886	-	2.886

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY2022 funding decreased because C-HOBS Engineering Manufacturing and Design phase is coming to a close and transitioning to procurement.					
<p>Title: Joint Air-to-Ground Missile for Fixed Wing (JAGM-F)</p> <p>Description: Joint Air-to-Ground Missile for Fixed Wing Aircraft (JAGM-F) is an improvement to the Army-led JAGM, which will allow the missile to be ejected 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 as well as austere communication environments. JAGM-F will have the ability to engage multiple targets types near-simultaneously in multiple engagement modes. Efforts include but are not limited to capability demonstration design, testing, and qualification, and manufacture/build components to production standards. Intent is to investigate meeting all BRU-55, BRU-70, and BRU-61 environments.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Base Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: N/A</p>	14.615	0.000	0.000	-	0.000
<p>Title: Next Generation Area Attack Weapons (NGAAWs)</p> <p>Description: Next Generation Area Attack Weapons (NGAAWs) are a family of unitary area attack weapon capabilities to meet the DoD policy regarding cluster munitions and unintended harm to civilians. They consist of BLU-134/B and BLU-136/B warheads with a height of burst sensor. BLU-134/B Improved Lethality Warhead (ILW),NGAAW Increment I, is a near-term solution for area attack as an anti-personnel anti-materiel (APAM) weapon that improves lethality using a 500 lb warhead design and any variants. The BLU-136/B NGAAW Increment II continues development to provide significantly increased capability and lethality against area targets as an APAM weapon. This effort is being executed using an accelerated acquisition strategy to study, design, develop, and test a 2,000 lb unitary warhead design and any variants based on target sets.</p> <p>FY 2021 Plans:</p>	0.163	0.060	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
BLU-136/B is completing insensitive munitions testing in FY21 to include two slow cooks offs and two fast cook offs. FY 2022 Base Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased because BLU-136/B's Engineering Manufacturing and Design phase is coming to a close and transitioning to procurement.					
Accomplishments/Planned Programs Subtotals	20.528	17.969	3.950	-	3.950

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF 01 Line Item 353020: <i>General Purpose Bombs</i>	621.732	369.566	159.920	16.645	176.565	-	-	-	-	-	-
• PAAF 01 Line Item 356120: <i>Fuzes</i>	144.214	102.918	45.389	5.406	50.795	-	-	-	-	-	-
• PAAF 01 Line Item 352010: <i>Cartridges</i>	193.048	157.799	157.448	11.715	169.163	-	-	-	-	-	-

Remarks
N/A

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

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
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<p>-Emerging Technologies are innovative efforts with most activities performed through various contracted services such as OTA's and DOTC; a limited number of activities such as technical analysis and test are performed by organic resources and support contractors.</p> <p>- Joint Air-to-Ground Missile for Fixed Wing Aircraft (JAGM-F) utilizes the Defense Ordnance Technology Consortium (DOTC) contract combined with modeling and simulation contract support and government test support.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 653133 / Bombs & Fuzes
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 and Emerging Technology	Various	Various : TBD	-	0.300	Mar 2020	2.200	Mar 2021	0.200	Mar 2022	-		0.200	-	-	-
MMHE - Prototypes	Various	Prototype Fabrication Shop : Eglin AFB, FL	-	0.194	Apr 2020	0.443	Apr 2021	0.527	Jan 2022	-		0.527	-	-	-
CHOBS - HW/SW	C/Various	Various : Eglin AFB, FL	-	1.149	Jan 2020	6.302	Oct 2020	0.560	Oct 2021	-		0.560	-	-	-
JAGM-F	C/FFP	DOTC : Huntsville, AL	-	10.968	Mar 2020	-		-		-		-	-	-	-
Subtotal			-	12.611		8.945		1.287		-		1.287	-	-	N/A

Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 - Shipping/Supplies	Various	MMHE Program Office : Eglin AFB, FL	-	0.130	Mar 2020	0.100	Mar 2021	0.010	Nov 2021	-		0.010	-	-	-
JAGM-F - Test Vehicles	Various	Army : Huntsville, AL	-	0.000	Jun 2020	-		-		-		-	-	-	-
Subtotal			-	0.130		0.100		0.010		-		0.010	-	-	N/A

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 and Emerging Technology	Various	Various : Various	-	1.366	Jun 2020	-		-		-		-	-	-	6.530
CHOBS - Test and Evaluation	C/Various	Various : Various	-	1.855	Aug 2020	8.058	Oct 2020	2.026	Oct 2021	-		2.026	-	-	-
MMHE - Test Support	PO	96 TW : Eglin AFB, FL	-	0.050	Nov 2019	0.050	Nov 2020	0.010	Nov 2021	-		0.010	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

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Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
NGAAW- Test and Evaluation	PO	96 TW : Eglin AFB, FL	-	0.163	Jul 2020	0.060	Nov 2020	-		-		-	-	-	-
JAGM-F - Test Support	Various	Various : Various	-	2.894	Oct 2020	-		-		-		-	-	-	-
Subtotal			-	6.328		8.168		2.036		-		2.036	-	-	N/A

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 and Emerging Technology- PMA	Various	Not specified. : TBD	-	-		-		0.100	Dec 2021	-		0.100	-	-	-
Medium Caliber - PMA	Various	Various : Eglin AFB, FL	-	0.100	Jun 2020	0.100	Jun 2021	0.100	Jun 2022	-		0.100	-	-	-
MMHE - PMA	Various	Various : Eglin AFB, FL	-	0.400	Jun 2020	0.021	Jun 2021	0.117	Mar 2022	-		0.117	-	-	-
CHOBS - PMA	Various	Various : Eglin AFB, FL	-	0.206	Oct 2019	0.635	Oct 2020	0.300	Oct 2021	-		0.300	-	-	-
JAGM-F - PMA	Various	Various : Eglin AFB, FL	-	0.753	Aug 2020	-		-		-		-	-	-	-
Subtotal			-	1.459		0.756		0.617		-		0.617	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	20.528	17.969	3.950	-	-	3.950	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<i>Bombs and Fuzes</i>																												
MMHE: design, prototype, test priority efforts																												
IM and Emerging Technologies																												
BLU-136/B: Warhead design/initial prototype																												
C-HOBS: RFP/Source selection																												
C-HOBS: Contract Award																												
C-HOBS: Design, build, test, and integrate																												
JAGM-F: Contract Award																												
JAGM-F: Conduct Demonstration																												
Medium Caliber Ammunition: Assess, refine, and develop																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Bombs and Fuzes</i>				
MMHE: design, prototype, test priority efforts	1	2020	4	2026
IM and Emerging Technologies	1	2020	4	2026
BLU-136/B: Warhead design/initial prototype	1	2020	4	2021
C-HOBS: RFP/Source selection	1	2020	2	2021
C-HOBS: Contract Award	2	2020	2	2021
C-HOBS: Design, build, test, and integrate	2	2020	4	2022
JAGM-F: Contract Award	2	2020	3	2020
JAGM-F: Conduct Demonstration	3	2020	4	2020
Medium Caliber Ammunition: Assess, refine, and develop	1	2020	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 655361 / Stores-Aircraft Interface
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
655361: Stores-Aircraft Interface	-	8.977	5.065	5.097	0.000	5.097	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

655361: The Stores-Aircraft Interface 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. The savings realized from this effort is on average 6 years of schedule and \$22M per aircraft/weapon combination. This is accomplished integrating weapons independent of aircraft Operational Flight Programs (OFP) cycles. UAI is currently implemented on the F-15E, F-16 Block 40/50 and European Participating Air Forces (EPAF) 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), Joint Mission Planning System (JMPS) and Precision Guided Munitions Planning Software (PGMPS). Planned implementations include Joint Strike Fighter (JSF/F-35), B-21, MQ-9, JASSM-Extended Range (JASSM-ER), F/A-18, Advanced Anti-Radiation Guided Missile - Extended Range (AARGM-ER), Stand-in Attack Weapon (SiAW), Long Range Anti-Ship Missile (LRASM), AC-130J, Golden Horde, Combat Weapons Delivery Software (CWDS), Select Precision Effects At Range Capability 3 (SPEAR3), Joint Strike Missile (JSM), and Navy Open Mission Systems (NOMS). The UAI program office is responsible for development and enhancement of the UAI standard, support to coalition/allied/joint interoperability efforts for weapons-platform interface, provision of certification tools, and implementation support to aircraft and weapons.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Universal Armament Interface (UAI) Development	8.977	5.065	5.097	-	5.097
Description: Continue development and maintenance of the Air Force's mandated aircraft/weapon interface, to include UAI Mission Planning and Launch Acceptability Region (LAR) components.					
FY 2021 Plans: Development and configuration management of UAI in response to evolving requirements to include expanding capability to support air-to-air weapon integration. Ongoing air-to-ground integration support includes all USAF weapons, aircraft including USN and US Army customers. Support working groups, technical meetings and workshops, risk reduction assessments, common mission planning, and platform-specific implementation of UAI. Maintain and logistically support existing certification tools to meet current and 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), Select Precision Effects At Range Capability 3(SPEAR3), and Stand Off Missile - Joint (SOM-J).					
FY 2022 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force				Date: May 2021	
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)					
Continue development and configuration management of UAI in response to evolving requirements including ongoing transition of mission planning to Navy Open Mission Systems (NOMS); inclusion of expanded capability to support air-to-air weapon integration will require additional funding. Ongoing air-to-ground integration support includes all USAF weapons and aircraft, and includes USN and US Army customers. Support working groups, technical meetings and workshops, risk reduction assessments, common mission planning, and platform-specific implementation of UAI. Maintain and logistically support existing certification tools (within program budgetary limits) to meet current and 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 international efforts including but not limited to Joint Strike Missile (JSM), SPEAR3, Stand Off Missile - Joint (SOM-J), and develop/implement a multinational Memorandum of Understanding.					
FY 2021 to FY 2022 Increase/Decrease Statement: Funding increase is minimal and due to inflation.					
Accomplishments/Planned Programs Subtotals					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
	8.977	5.065	5.097	-	5.097
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, the original contracts expired. Under the authority of a 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 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 (OEMs). These new sole-source contracts were awarded in November 2015 and expired in November 2019. A new J&A was signed in December 2018, prior to contract expiration, and four new five-year sole-source contracts (CPFF) were awarded in November 2019.					

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / Armament/Ordnance Development	Project (Number/Name) 655361 / Stores-Aircraft Interface
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	8.787	Nov 2019	4.861	Nov 2020	4.891	Nov 2021	-		4.891	-	-	-
Subtotal			-	8.787		4.861		4.891		-		4.891	-	-	N/A

Remarks
New 5 year Follow-on contract was awarded in November 2019.

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
A&AS Contractor Support	Various	Various : Various	-	0.140	Oct 2019	0.144	Dec 2020	0.146	Jun 2022	-		0.146	-	-	-
Program Office Travel	C/CPAF	Not specified. : TBD	-	0.050		0.060		0.060		-		0.060	-	-	-
Subtotal			-	0.190		0.204		0.206		-		0.206	-	-	N/A

Remarks
PE Systems Contractor provides support to the Program Office for financial services.

Project Cost Totals	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
	-	8.977	5.065	5.097	-	5.097	-	-	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force **Date:** May 2021

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>
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
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

Stores-Aircraft Interface																												
Governance (Super Joint Interface Control Working Group)																												
Certification Tools (CTs) Dev / Update																												
UAI (Mission Planning) Common Component																												
Weapon Sustainment/Regression Efforts: JDAM, JASSM-ER, SDB I+II																												
A/C Sustainment/Regression Efforts: F-16 Blk 40/50, F-15E																												
Weapon Dev: SiAW, JSM, SPEAR3, LRASM, AARGM-ER, JAGM-F, Golden Horde																												
A/C Dev: F-16 Foreign Military Sales, F-35, B-21, B-1, A-10, F-22, F-18, MQ-9, F-15EX, MQ-IC, AC-130J																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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				
Governance (Super Joint Interface Control Working Group)	1	2020	4	2026
Certification Tools (CTs) Dev / Update	1	2020	4	2026
UAI (Mission Planning) Common Component	1	2020	4	2026
Weapon Sustainment/Regression Efforts: JDAM, JASSM-ER, SDB I+II	1	2020	4	2026
A/C Sustainment/Regression Efforts: F-16 Blk 40/50, F-15E	1	2020	4	2026
Weapon Dev: SiAW, JSM, SPEAR3, LRASM, AARGM-ER, JAGM-F, Golden Horde	1	2020	4	2026
A/C Dev: F-16 Foreign Military Sales, F-35, B-21, B-1, A-10, F-22, F-18, MQ-9, F-15EX, MQ-IC, AC-130J	1	2020	4	2026