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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Air Force **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0207328F / <i>Stand In Attack Weapon</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	3.288	14.975	162.840	0.000	162.840	142.725	165.303	218.950	151.542	Continuing	Continuing
653133: <i>Stand In Attack Weapon</i>	-	3.288	14.975	162.840	0.000	162.840	142.725	165.303	218.950	151.542	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Stand In Attack Weapon (SiAW) system will provide strike capability to defeat rapidly relocatable targets that create the Anti-Access/Area Denial (A2/AD) environment. The target environment includes Theater Ballistic Missile Launchers, Land Attack and Anti-Ship Cruise Missile Launchers, GPS Jammers, Anti-Satellite Systems, and Integrated Air Defense Systems. Key attributes of the Stand-in Attack Weapon (SiAW) will include Lethality, Responsiveness, Survivability, Range, and Internal Carriage. The F-35 is the Air Force threshold platform. The path to the SiAW capability is through the Navy Advanced Anti-Radiation Guided Missile-Extended Range (AARGM-ER) program with additions to the Universal Armament Interface (UAI), Warhead/Fuze, and Integration on the F-35. SiAW was a FY18 new start. New start activities initiated program stand-up, facility upgrades, program office support, and other analysis support to include UAI, Mission Planning, Test Planning and Range Infrastructure requirements, and future test and integration on the F-35.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver SiAW 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, 0605898F and 0605833F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	3.400	43.175	87.840	0.000	87.840
Current President's Budget	3.288	14.975	162.840	0.000	162.840
Total Adjustments	-0.112	-28.200	75.000	0.000	75.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-28.200			
• 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	-0.112	0.000			
• Other Adjustments	0.000	0.000	75.000	0.000	75.000

**Change Summary Explanation**

FY2018, \$0.112M Reduction for SBIR

FY2019, Congressional Reduction of \$28.2M

FY2020, increase of \$75.0M to improve lethality, responsiveness of weapon, acquire Air Force target sets sooner and personnel test facilities on the water and land ranges to support more accurate test design and conduct.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<p><b>Title:</b> Warhead and Fuze Development</p> <p><b>Description:</b> Develop and test warhead and fuze for SiAW and United States Navy (USN) Advanced Anti-Radiation Guided Missile-Extended Range (AARGM-ER).</p> <p><b>FY 2019 Plans:</b> Start design efforts for the warhead and fuze for SiAW under the USN AARGM-ER contract.</p> <p><b>FY 2020 Plans:</b> Continue working with the USN AARGM-ER Program office for further development and qualification.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase is due to FY20 being a full year of warhead/fuze development and ramping up for prototypes and testing.</p>	0.000	6.200	14.800
<b>Title:</b> Universal Armament Interface (UAI) / Anti-Radiation Homing message (ARH)	0.000	0.500	10.500

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<p><b>Description:</b> Development and Test of an UAI ARH message set for the SiAW/AARGM-ER missile.</p> <p><b>FY 2019 Plans:</b> Start design efforts for UAI ARH message set.</p> <p><b>FY 2020 Plans:</b> Continue design and early validation of the UAI message set.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase is due to FY20 being a full year of UAI ARH development.</p>				
<p><b>Title:</b> F-35 Integration</p> <p><b>Description:</b> Integration of the SiAW missile into the F-35. Efforts for aircraft integration will address the F-35 aircraft software development, UAI F-35 message set, Mission Planning capability in Joint Mission Planning System (JMPS), engineering to support weapon bay integration, testing, and airworthiness certification for the missile carriage and employment efforts.</p> <p><b>FY 2019 Plans:</b> Begin the characterization and designs required for F-35 weapons bay and data transfer integration. Begin design of the SiAW mission planning capability in JMPS.</p> <p><b>FY 2020 Plans:</b> Continue F-35 weapons bay integration design work. Continue development of an Air Force mission planning system involving the development of the JMPS unique planning component which maximizes SiAW capability for F-35 integration. Will also start Air Force UAI Development on the F-35.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase is due to FY20 being the first full year of F-35 Integration and associated development efforts.</p>		0.000	1.000	28.445
<p><b>Title:</b> Lethality, Responsiveness, Enhancements and Survivability (LRES)</p> <p><b>Description:</b> Modeling, simulation and design of factors that augment weapons' lethality, flight responsiveness and survivability through software and hardware enhancements. Development of target sets and threat scenarios for testing.</p> <p><b>FY 2019 Plans:</b> Continuing with Modeling &amp; simulation to determine effective characteristics to meet the target set requirements.</p> <p><b>FY 2020 Plans:</b></p>		1.015	2.185	64.145

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Continue and increase into the development and design of the Warhead/Fuze, UAI/ARH Message Set; Mission Planning; F-35 integration. Continue modeling and simulation and begin design on key attributes needed to meet desired outcomes for software and hardware enhancements.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase is due to FY20 being a full year design work for modeling, software, and hardware enhancements.				
<b>Title:</b> SiAW Targets and Test Support  <b>Description:</b> Government Test Support for F-35 Integration and Warhead/Fuze. Includes flight test equipment, construction and buying target sets to meet mission requirement; test wing and range support to include both sea and land range support, and other ground/flight test support that are specific to the Air Force target set requirements.  <b>FY 2019 Plans:</b> Initial startup costs with 96TW to begin flight test support to include test equipment, & constructions of targets, and range support.  <b>FY 2020 Plans:</b> Continue test support to include test equipment, & constructions of targets, range support, and other ground test support. This also includes modification to ranges including sea and land for longer range (straight shot capability).  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Increase due to first full year of development, testing and design review. The AF will purchase Target Sets to include Sea and Land test range infrastructure upgrades.		0.000	1.000	10.750
<b>Title:</b> SiAW Program Integration  <b>Description:</b> Start up to include facilities, personnel, equipment plus other requirements to stand-up program office.  <b>FY 2019 Plans:</b> Begin planning and project management of initial stand-up of program office.  <b>FY 2020 Plans:</b> Continue planning, project management and initial procurement of equipment & facility updates to support program office personnel.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> SiAW program integration increase due to one-time cost for increasing program office footprint/seating via relocatable, temporary equipment to support workforce, and office stand-up.		2.273	4.090	34.200
<b>Accomplishments/Planned Programs Subtotals</b>		3.288	14.975	162.840

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

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 0205601N: <i>Harm Improvements</i>	49.221	99.240	119.649	-	119.649	49.605	34.825	42.249	48.225	0.000	443.014

**Remarks**

Other Program funds - US Navy AARGM-ER Program Office: HARM Improvements /Operations Systems Development US Navy appropriation RDT&E 1319

**E. Acquisition Strategy**

The Stand-in-Attack (SiAW) program acquisition strategy will leverage the Navy's Advanced Anti-Radiation Guided Missile - Extended Range (AARGM-ER) program with the Air Force integrating onto the F-35 platform.

In partnership with the AARGM-ER program, SiAW will enter the EMD phase of the acquisition cycle and focus on detailed design, test, integrations, and production activities of SiAW. The Department of Navy (DoN) will be the lead for development and the United States Air Force (USAF) will be the lead for F-35 Integration. The relationship between the DoN and USAF will be defined in three separate Memorandums of Agreement (MOA): Requirements MOA, Program Office MOA, and Service Acquisition Executive MOA.

**F. 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 2020 Air Force** **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0207328F / <i>Stand In Attack Weapon</i>	<b>Project (Number/Name)</b> 653133 / <i>Stand In Attack Weapon</i>
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<b>Product Development (\$ in Millions)</b>				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			
Warhead & Fuze Development	Various	Various : Pax River, MD	-	0.000		6.200	Mar 2019	14.800	Dec 2019	-		14.800	Continuing	Continuing	-
Universal Armament Interface (UAI) Anti-Radiation Homing message (ARH) & Mission Planning (MP)	Various	Various : Pax River, MD	-	0.000		0.500	Jul 2019	10.500	Dec 2019	-		10.500	Continuing	Continuing	-
F-35 Integration	Various	Various : Various	-	0.000		1.000	Jul 2019	28.445	Dec 2019	-		28.445	Continuing	Continuing	-
Lethality, Responsiveness, Enhancements and Survivability	Various	Various : Various	-	1.015	Sep 2018	2.185	Feb 2019	64.145	Nov 2019	-		64.145	Continuing	Continuing	-
<b>Subtotal</b>			-	1.015		9.885		117.890		-		117.890	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			
Government Test Support, includes flight test equipment, targets, 96TW and range support and SEEK Eagle support	Various	Not specified. : TBD	-	-		1.000		10.750		-		10.750	Continuing	Continuing	-
<b>Subtotal</b>			-	-		1.000		10.750		-		10.750	Continuing	Continuing	N/A

**Remarks**  
Increase due to facilitation projects on the water and land ranges to allow more accurate testing of Air Force SiAW will also purchase/build up of the appropriate Air Force Target sets.

<b>Management Services (\$ in Millions)</b>				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 (PMA)	TBD	Various : Eglin AFB, FL	-	2.273	Sep 2018	4.090		34.200		-		34.200	Continuing	Continuing	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force** **Date:** February 2019

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Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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			
Provides program office oversight of development and upgrade activities to include planning and project management and personnel facilities.															
<b>Subtotal</b>				-	2.273		4.090		34.200		-	34.200	Continuing	Continuing	N/A

**Remarks**  
Management Services increase due to purchasing of modular equipment for facilitation of personnel and other equipment. Includes: Facilities, Civilian Pay, SBIR and travel.

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	3.288	14.975	162.840	-	162.840	Continuing	Continuing	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile:** PB 2020 Air Force **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0207328F / <i>Stand In Attack Weapon</i>	<b>Project (Number/Name)</b> 653133 / <i>Stand In Attack Weapon</i>
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FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
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

<b>Warhead &amp; Fuze Development</b>	
Design warhead & fuze	
<b>UAI / ARH Message</b>	
Design, test and validate UAI / ARH message	
<b>F-35 Integration</b>	
S&E Integration Risk Reduction	
<b>LRES</b>	
Modeling & Simulation to determine characteristics of target set requirements	
<b>SiAW Targets and Test Support</b>	
Flight test support and range modifications	
<b>SiAW Program Integration</b>	
Material Solution Analysis: Analysis of Alternatives (AoA)	
Acquisition Strategy	
USN AARGM-ER/AF SiAW Requirements MOA	
USN AARGM-ER/AF SiAW Program Office MOA	
USN/AF SAE MOA	
Technology Maturation and Risk Reduction (TMRR)	
Engineering and Manufacturing Development (EMD)	



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2020 Air Force **Date:** February 2019

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Warhead &amp; Fuze Development</i></b>				
Design warhead & fuze	3	2019	4	2023
<b><i>UAI / ARH Message</i></b>				
Design, test and validate UAI / ARH message	3	2019	4	2023
<b><i>F-35 Integration</i></b>				
S&E Integration Risk Reduction	4	2019	4	2024
<b><i>LRES</i></b>				
Modeling & Simulation to determine characteristics of target set requirements	4	2019	4	2023
<b><i>SiAW Targets and Test Support</i></b>				
Flight test support and range modifications	4	2019	1	2022
<b><i>SiAW Program Integration</i></b>				
Matériel Solution Analysis: Analysis of Alternatives (AoA)	1	2018	3	2019
Acquisition Strategy	4	2018	3	2019
USN AARGM-ER/AF SiAW Requirements MOA	4	2018	2	2019
USN AARGM-ER/AF SiAW Program Office MOA	4	2018	2	2019
USN/AF SAE MOA	4	2018	3	2019
Technology Maturation and Risk Reduction (TMRR)	1	2018	3	2023
Engineering and Manufacturing Development (EMD)	2	2019	4	2023

**Note**

USAF will follow AARGM-ER's Acquisition Milestone Schedule. FY20 includes KP 3 Milestone and Critical Design Review (CDR).