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

<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 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	-	151.534	150.371	166.570	0.000	166.570	-	-	-	-	-	-
653133: <i>Stand In Attack Weapon</i>	-	151.534	150.371	166.570	0.000	166.570	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Stand-in Attack Weapon (SiAW) system will provide the capability to strike rapidly re-locatable targets that create the Anti-Access/Area Denial (A2/AD) environment. SiAW targets include Theater Ballistic Missile Launchers, Land Attack and Anti-Ship Cruise Missile Launchers, GPS Jammers, Anti-Satellite Systems, and Integrated Air Defense Systems. The SiAW missile system will be developed under a Digital Acquisition (DA) approach in a competitive environment that will emphasize agility and innovation. Interim capability will be pursued through the Navy's Advanced Anti-Radiation Guided Missile-Extended Range (AARGM-ER) program with improved warhead/fuze and F-35 integration (including Universal Armament Interface [UAI] and Mission Planning).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$3.210M was expended for civilian pay expenses and in FY21 \$3.701M is forecasted for civilian pay expenses in this program element.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	162.840	160.438	165.052	0.000	165.052
Current President's Budget	151.534	150.371	166.570	0.000	166.570
Total Adjustments	-11.306	-10.067	1.518	0.000	1.518
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-9.792			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-6.955	0.000			
• SBIR/STTR Transfer	-4.351	0.000			
• Other Adjustments	0.000	-0.275	1.518	0.000	1.518

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<b>Change Summary Explanation</b> FY20: -6.955M in Reprogramming for other weapons efforts and PNT; -4.351M for Small Business Innovative Research (SBIR) FY21: Appn Conference Mark -9.792M RDT&E for "Improving funds management: Forward financing F-35 integration" FY22: No significant adjustment				
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Warhead / Electronic Safe and Arm Fuze (ESAF) Development		16.994	19.950	13.510
<b>Description:</b> Development of a new warhead and ESAF to support AARGM-ER. Will design, test, and certify new warhead/ESAF.				
<b>FY 2021 Plans:</b> Warhead/ESAF development and qualification. Working with the USN AARGM-ER Program Office on test and integration.				
<b>FY 2022 Plans:</b> Continue working with the USN AARGM-ER Program Office on test and integration, and the warhead/ESAF development and qualification.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to draw down and closure of the warhead/ESAF development and qualification.				
<b>Title:</b> Universal Armament Interface (UAI) / Anti-Radiation Homing (ARH) message		17.094	10.540	5.866
<b>Description:</b> Develop and test a UAI/ARH message set for the AARGM-ER missile.				
<b>FY 2021 Plans:</b> Testing, certification and validation of the UAI/ARH for the AARGM-ER missile.				
<b>FY 2022 Plans:</b> Continue testing, certification and validation of the UAI/ARH.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to transition of UAI effort from implementation to checkout and validation.				
<b>Title:</b> F-35 Integration		34.126	15.205	17.765
<b>Description:</b> Integration of the AARGM-ER/SiAW missile onto the F-35. Efforts for aircraft integration will address the F-35 aircraft software development, Mission Planning capability, engineering to support weapon integration, testing, and airworthiness certification for the missile carriage and employment efforts.				
<b>FY 2021 Plans:</b>				

**UNCLASSIFIED**

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>Integrate the AARGM-ER on the F-35A as an interim path to the USAF SiAW; includes wind tunnel testing, F-35 weapon integration, launcher adapter design, and development of mission planning.</p> <p><b>FY 2022 Plans:</b> Continue to integrate the AARGM-ER on the F-35 as an interim path to the USAF SiAW; includes ground testing, F-35 weapon integration, launcher adapter development and mission planning.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to continued integration activities of AARGM-ER on the F-35.</p>				
<p><b>Title:</b> Advanced Technology Risk Reduction</p> <p><b>Description:</b> Conduct risk reduction on emerging technologies for future SiAW tech insertion to maintain operational effectiveness in classified scenarios.</p> <p><b>FY 2021 Plans:</b> Completion of risk reduction for the technology maturation of critical components of the SiAW weapon.</p> <p><b>FY 2022 Plans:</b> Risk Reduction efforts for the technology maturation of critical components has transitioned to SiAW Development.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to completion of risk reduction and transition to SiAW development.</p>		64.242	31.910	0.000
<p><b>Title:</b> SiAW Development</p> <p><b>Description:</b> Conduct SiAW technology development and testing.</p> <p>This is not a new start. This is a continuation of development efforts that were previously covered in the 21PB under Advanced Technology Risk Reduction and F-35 Integration.</p> <p><b>FY 2021 Plans:</b> Continuing on from the Advance Technology Risk Reduction, SiAW will complete the preliminary design and begin weapon system integration activities of critical components and develop SiAW Government Reference Architecture (GRA) using Weapon Open System Architecture as the starting point.</p> <p><b>FY 2022 Plans:</b> A continued requirement; funding will complete SiAW detailed design and continue integration activities of critical components and begin development of advanced technologies into the missile system by implementing Model Based System Engineering and</p>		-	48.046	73.784

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
Digital Engineering approaches. As advanced technologies are developed, evaluate subcomponent performance and ability to integrate into an all up round.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to ramp up of system integration activities and initial evaluation of advanced technologies in subcomponents and all up rounds.			
<b>Title:</b> Target/Test Assets, Testing, & Support  <b>Description:</b> Provides associated government and contract support for F-35 developmental and operational testing. Includes required test assets and support, flight test equipment, construction and procurement of targets to meet mission requirements, test wing and range support to include both sea and land ranges, and ground/flight test support.  <b>FY 2021 Plans:</b> Conduct test/range/ground support, purchase targets, test equipment, and test assets. Begin target/threat emitter acquisition, weapon cybersecurity support and test investments; begin development of flight telemetry and termination system.  <b>FY 2022 Plans:</b> Continue test/range/ground support, purchase targets, test equipment, and test assets. Continue target/threat emitter acquisition, weapon cybersecurity support and test investments; continue development of flight telemetry and termination system.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to variation in testing, targets/shapes cost increase, and continued test asset & target assets builds.	19.078	24.720	55.645
<b>Accomplishments/Planned Programs Subtotals</b>	151.534	150.371	166.570

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 0205601N: Harm Improvements	112.350	128.640	122.322	-	122.322	-	-	-	-	-	-

**Remarks**  
RDTE - Title: US Navy AARGM-ER Program Office, Anti-Radiation Missile Improvement (new this budget cycle was HARM Improvements) Systems Development US Navy appropriation RDT&E 1319.

**UNCLASSIFIED**

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**E. Acquisition Strategy**

The Stand-in Attack Weapon (SiAW) program acquisition strategy is to leverage advanced technology developed during Risk Reduction to build prototypes in a competitive environment for initial capability. Through the use of Digital Model Based System Engineering (MBSE), Weapon Open System Architecture (WOSA), and Agile Software Development, the SiAW program will transition to production with continuous capability improvements. SiAW will be integrated on the F-35A. Air Force plans to continue Navy-led AARGM-ER investments to field interim F-35 SEAD capability.

**UNCLASSIFIED**

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

<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 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			
Warhead / ESAF Development	MIPR	NGDS : Northridge, CA	-	10.100	Dec 2019	13.700	Dec 2020	7.400	Dec 2021	-		7.400	-	-	-
Universal Armament Interface (UAI) Anti-Radiation Homing message (ARH)	MIPR	Various : Various	-	10.200	Dec 2019	6.600	Dec 2020	4.056	Dec 2021	-		4.056	-	-	-
KTR SEPM	MIPR	NGDS : Northridge, CA	-	11.000	Dec 2019	11.000	Dec 2020	12.500	Dec 2021	-		12.500	-	-	-
F-35 Integration	MIPR	Various : Various	-	32.542	Dec 2020	8.565	Apr 2021	13.000	Aug 2022	-		13.000	-	-	-
Mission Planning	MIPR	Various : Various	-	0.190	Jul 2020	1.600	Feb 2021	1.854	Dec 2021	-		1.854	-	-	-
Advance Technology Risk Reduction	MIPR	Various : Various	-	62.858	Dec 2019	30.500	Dec 2020	0.000	Dec 2021	-		0.000	-	-	-
SiAW Development	Various	Various : Various	-	0.000		46.636	Jul 2021	71.974	Nov 2021	-		71.974	-	-	-
<b>Subtotal</b>			-	126.890		118.601		110.784		-		110.784	-	-	N/A

**Remarks**  
Northrop Grumman Defense Systems (NGDS)

<b>Support (\$ in Millions)</b>				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			
Civ Pay - Direct Site Authorization (DCA)	Allot	AFLCMC/FZA : Wright Pat, OH	-	3.357		3.991		4.192		-		4.192	-	-	-
<b>Subtotal</b>			-	3.357		3.991		4.192		-		4.192	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
Government Test/Target Support (includes flight test equipment, Targets/	Various	Various : Various	-	4.952		11.931		18.876		-		18.876	-	-	-



**UNCLASSIFIED**

**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

<b>Warhead &amp; ESAF Development</b>	
Design Warhead & Electronic Safe and Arm Fuze	
<b>UAI / ARH</b>	
Design, test and validate UAI / ARH message set	
<b>F-35 Integration</b>	
External integration of SiAW on F-35	
<b>Advanced Technology Risk Reduction</b>	
Emerging technology maturation for future SiAW tech insertion.	
<b>SiAW Development</b>	
SiAW Development	
<b>Target &amp; Test Assets, Test, &amp; Support</b>	
Flight test support, range modifications, & targets	

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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
<b>Warhead &amp; ESAF Development</b>				
Design Warhead & Electronic Safe and Arm Fuze	1	2020	4	2022
<b>UAI / ARH</b>				
Design, test and validate UAI / ARH message set	1	2020	4	2026
<b>F-35 Integration</b>				
External integration of SiAW on F-35	4	2020	4	2026
<b>Advanced Technology Risk Reduction</b>				
Emerging technology maturation for future SiAW tech insertion.	1	2020	4	2021
<b>SiAW Development</b>				
SiAW Development	4	2021	4	2026
<b>Target &amp; Test Assets, Test, &amp; Support</b>				
Flight test support, range modifications, & targets	1	2020	4	2026