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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 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0101122F / <i>Air-Launched Cruise Missile (ALCM)</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	-	10.116	1.430	0.453	0.000	0.453	-	-	-	-	-	-
674797: <i>ALCM Upgrades</i>	-	10.116	1.430	0.453	0.000	0.453	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The AGM-86B, Air Launched Cruise Missile (ALCM), is a subsonic, air-to-surface strategic nuclear missile, operational since 1982. Armed with a W-80 warhead, it is designed to evade air and ground-based defenses in order to strike targets at any location within any enemy's territory. The ALCM is designed for B-52H internal and external carriage.

RDT&E funds support development of new tests and evaluation procedures, software, and equipment. RDT&E funds also provide sustainment solutions for Line Replaceable Units (LRU) and technology insertion to ensure ALCM sustainability supports Air Force strategic nuclear deterrence and Global Strike mission requirements through 2030. Additionally, RDT&E funds support aging and surveillance analysis to pro-actively identify components which will degrade system reliability.

The ALCM Test Plan Development and Evaluation program develops plans and procedures for testing nuclear systems, and implements those procedures as directed by the Chairman, Joint Chiefs of Staff (CJCS) and to satisfy the recurring requirements to test Chemical, Biological, Radiological, and Nuclear (CBRN) susceptibility.

An extensive Service Life Extension Program (SLEP) is in place to address age related issues and to ensure reliability and sustainability through 2030. Technology insertion is anticipated to address serviceability of components at or near end of life.

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.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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B. Program Change Summary (\$ in Millions)	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	10.217	1.433	0.459	0.000	0.459
Current President's Budget	10.116	1.430	0.453	0.000	0.453
Total Adjustments	-0.101	-0.003	-0.006	0.000	-0.006
• Congressional General Reductions	-0.101	-0.003			
• 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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.006	0.000	-0.006

Change Summary Explanation

No Significant Changes

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>
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Title: Inertial Navigation Element (INE)	1.057	1.200	0.000
Description: Conducting analysis and engineering efforts to ensure short and long term supportability of the ALCM Inertial Navigation Element (INE).			
FY 2021 Plans: The need for more rigorous qualification testing was highlighted in the test planning for INE. FY21 efforts will complete planning and execution of INE qualification testing.			
FY 2022 Plans: N/A			
FY 2021 to FY 2022 Increase/Decrease Statement: Development and testing - including qualification testing -- completes with FY21 funding. Therefore INE RDT&E decreases in FY22.			
Title: ALCM Test Plan Development and Evaluation	9.059	0.230	0.453
Description: Develop test procedures to implement CJCS-directed requirement for Electromagnetic (EM) testing for nuclear systems.			
FY 2021 Plans:			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Execute Neutron Test in support of ALCM Chemical Biological Radiological and Neutron (CBRN) Survivability Requirement IAW AFI 10-2607 FY 2022 Plans: Support test plan development for future CBRN testing FY 2021 to FY 2022 Increase/Decrease Statement: INE program completes in FY21; remaining funds for CBRN testing and future development information to support ALCM through 2030.			
Accomplishments/Planned Programs Subtotals	10.116	1.430	0.453

D. Other Program Funding Summary (\$ in Millions)											
<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>
• MPAF 03 Line Item MALCBG: <i>ALCM, Missile Modifications</i>	77.387	80.837	83.498	-	83.498	-	-	-	-	-	-
• MPAF 04 Line Item MALCBG: <i>ALCM, Replenishment Spares</i>	2.321	2.359	2.407	-	2.407	-	-	-	-	-	-
• OPAF 03 Line Item MALCBG: <i>ALCM, Electronics & Telecommunications Equipment (BP83)</i>	1.806	1.840	1.873	-	1.873	-	-	-	-	-	-
• MPAF 04 Line Item 999/Replen Spa...: <i>ALCM, Initial Spares</i>	0.119	0.328	0.435	-	0.435	-	-	-	-	-	-

Remarks

E. Acquisition Strategy
 Previously, the Air Launched Cruise Missile (ALCM) was assessed in the nuclear environment for Chemical, Biological, Radiological and Nuclear (CBRN) Survivability for High Altitude Electromagnetic Pulse (HEMP) and Total Ionizing Dose at White Sands Missile Range (WSMR).

 Follow-on test development will assess the neutron and gamma component in the nuclear environment for CBRN survivability. Test development and execution will utilize organic and contractor agencies.

 INE SLEP plans for a three phase reliability assessment with comprehensive plan to address short and long term supportability.

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Phase 1 - Short-term parts shortage mitigation analyses with Tomahawk Reference Measuring Unit and Computer Phase 2 - Definition of scope of efforts and establishing the manufacturing methodology Phase 3 - Delivery of working engineering samples, certification of production, and production of INE's equal to the function and reliability of 'like new' devices		

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

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0101122F / Air-Launched Cruise Missile (ALCM)	Project (Number/Name) 674797 / ALCM Upgrades
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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			
INE Prototype	SS/ Various	NG : UT	-	1.057	Jan 2020	1.200	Jun 2021	-		-		-	-	-	-
CBRN Test Plan Development & Evaluation	Various	WSMR, Boeing : NV	-	0.810	Dec 2019	0.000		0.333	Mar 2022	-		0.333	-	-	-
Subtotal			-	1.867		1.200		0.333		-		0.333	-	-	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			
Management and Engineering Services for research, development, test and evaluation on ALCM	C/CPAF	Not specified. : TBD	-	8.229		0.210	Jul 2021	0.100	Jul 2022	-		0.100	-	-	-
PMA - Government Costs	Various	Various : Various	-	0.020		0.020	Jun 2021	0.020	Jun 2022	-		0.020	-	-	-
Subtotal			-	8.249		0.230		0.120		-		0.120	-	-	N/A

Remarks
Test Development and Evaluation PMA is for Supplies and Travel in support of project number 674797

	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	-	10.116	1.430	0.453	-	0.453	-	-	N/A

Remarks

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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
INE Sustainment				
INE CCA Development	1	2020	3	2021
CBRN Test				
CBRN Test Plan Development	1	2020	4	2026
CBRN Test Execution	1	2020	4	2026