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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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 0401115F / C-130 Airlift Squadron
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	48.698	12.552	0.407	0.000	0.407	0.415	0.000	0.000	0.000	Continuing	Continuing
672030: <i>C-130H MUOS/SATURN Radio</i>	-	0.000	0.393	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.393
675250: <i>C-130H Avionics Modernization Program (AMP) Increment 2</i>	-	48.698	12.159	0.407	0.000	0.407	0.415	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The C-130H is a medium sized tactical transport aircraft providing multi-purpose theater support throughout the globe. The C-130H fleet supports several diverse Air Force roles, including but not limited to tactical and inter-theater airlift and airdrop support, Arctic resupply, special operations support, aeromedical evacuation, aerial spraying, firefighting duties, and natural disaster and humanitarian relief missions.

Funding provides weapon system modifications and upgrades to meet USAF mission requirements for the LC/C-130H fleets.

C-130H AMP Increment 2 includes digital avionics upgrades (e.g. Flight Management System, improved navigation), cockpit modernization (e.g. glass/engine flight displays) and resolves select obsolescence and Diminishing Manufacturing Source (DMS) issues. RDT&E efforts will cover software development, design, integration, developmental and operational test, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, spares and peculiar support equipment in support of trial kit installs, Systems Integration Laboratory (SIL) development, type 1 training and C-130H aircrew and maintenance training systems and course ware development efforts, program office support and other efforts necessary to fulfill program requirements.

The development and fielding of the MUOS/SATURN Radio program (Project 672030) will be executed under the AMP Increment 2 program (Project 675250). The MUOS/Saturn Radio program updates radios due to future DMS/integration issues and the incorporation of MUOS/SATURN capabilities. The funding is required for the Non-Recurring Effort associated with integration, testing, Technical Orders, Engineering drawing's, Trial Kit Installations, Verification Kit Installations, and spectrum authorization.

This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130 Airlift Squadron weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.803 million was expended for civilian pay expenses in this program element, and in FY 2022 \$1.000 million is forecasted for civilian pay expenses in this program element.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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 0401115F / <i>C-130 Airlift Squadron</i>
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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.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	41.896	9.752	0.000	0.000	0.000
Current President's Budget	48.698	12.552	0.407	0.000	0.407
Total Adjustments	6.802	2.800	0.407	0.000	0.407
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	2.800			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	7.700	0.000			
• SBIR/STTR Transfer	-0.898	0.000			
• Other Adjustments	0.000	0.000	0.407	0.000	0.407

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 675250: *C-130H Avionics Modernization Program (AMP) Increment 2*

Congressional Add: *Infrared Suppression*

	FY 2021	FY 2022
	0.000	2.800
Congressional Add Subtotals for Project: 675250	0.000	2.800
Congressional Add Totals for all Projects	0.000	2.800

Change Summary Explanation

FY 2021 funding was increased by a total of \$6.802 million which included a \$7.700 million Below Threshold Reprogramming Action increase for AMP 2 increment development efforts and a decrease of \$0.898 million for Small Business Innovation Research.

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY 2023 cannot be made in a relevant manner.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 672030 / C-130H MUOS/SATURN Radio
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
672030: C-130H MUOS/SATURN Radio	-	0.000	0.393	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.393
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding for this effort changed from Project 672030, C-130H MUOS/SATURN Radio to Project 675250, C-130H Avionics Modernization Program (AMP) Increment 2 in FY23.

The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program via the incorporation of the ARC-210 radio. The ARC-210 radio addresses future Diminishing Manufacturing Source (DMS)/integration issues and incorporates the MUOS/SATURN capabilities. The funding is required for the Non-Recurring Effort associated with integration, testing, TO's, Engineering drawing's, TKI, VKI, and spectrum authorization.

The C-130H MUOS/SATURN Radio program modifies up to 134 C-130H USAF-owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to three prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining aircraft modified in the production phase.

This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

The program may also include any Contractor Manpower Equivalent (CME)/A&AS support deemed necessary to support the program objectives.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130H MUOS/SATURN Radio weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2022 \$0.000 million is forecasted for civilian pay expenses in this program element.

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

	FY 2021	FY 2022	FY 2023
Title: C-130H MUOS/SATURN Radio	0.000	0.393	0.000
Description: The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program. Beginning in FY 2023, transfer of Project 672030, C-130H MUOS/SATURN funding to Project 675250, AMP Increment 2.			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force	Date: April 2022
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 672030 / C-130H MUOS/SATURN Radio
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Program support to incorporate the ARC-210 Radio into the AMP Inc 2 product baseline. Beginning in FY 2023, transfer of Project 672030, C-130H MUOS/SATURN funding to Project 675250, AMP Increment 2. Any remaining effort will be accomplished in the C-130H AMP Incr. 2 program and the MUOS/SATURN Radio program will be executed via the incorporation of the ARC-210 radio.</p> <p>FY 2023 Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to transfer of Project 672030, C-130H MUOS/SATURN funding to Project 675250, AMP Increment 2.</p>			
Accomplishments/Planned Programs Subtotals	0.000	0.393	0.000

C. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>	
• RDTE 07 0401115F: C-130 Airlift Squadron	48.698	9.359	0.407	-	0.407	0.415	-	-	-	-	Continuing	Continuing

Remarks
The development and fielding of Project, 672030, MUOS/SATURN Radio program will be executed under Project 675250, C-130H AMP Increment 2 via the incorporation of the ARC-210 radio.

D. Acquisition Strategy
The MUOS/SATURN Radio effort was added to the C-130H AMP Increment 2 contract through an Unfinalized Contract Action (UCA) 3rd quarter of 2020 and a definitive contract modification 3rd quarter of 2021. Current efforts are primarily focused on the Engineering and Manufacturing Development (EMD). The C-130H AMP Increment 2 contract was awarded 3rd quarter of 2019.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 672030 / C-130H MUOS/SATURN Radio
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FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

C-130H MUOS/SATURN Radio	
MUOS/SATURN RADIO Design & Integration under AMP Increment 2	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 672030 / C-130H MUOS/SATURN Radio

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
C-130H MUOS/SATURN Radio				
MUOS/SATURN RADIO Design & Integration under AMP Increment 2	1	2021	3	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force										Date: April 2022		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron				Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
675250: C-130H Avionics Modernization Program (AMP) Increment 2	-	48.698	12.159	0.407	0.000	0.407	0.415	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C-130H AMP Increment 2 upgrades the C-130H fleet with comprehensive avionics and cockpit modernization which replaces aging unreliable equipment and adds combat capability enhancements. It also updates radios due to future Diminishing Manufacturing Sources (DMS)/integration issues and incorporates MUOS/SATURN radio capabilities. It also addresses select obsolescence and DMS issues with solutions that may include life of type buys or bridge buys. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

Funding provides weapon system modifications and upgrades to meet USAF mission requirements for the LC/C-130H fleets.

RDT&E efforts include but are not limited to software development, design, integration, development and operational test, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts, program office support and other efforts required to fulfill requirements.

The C-130H AMP Increment 2 program modifies up to 134 C-130H USAF owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to three prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining aircraft modified in the production phase.

The development and fielding of the MUOS/SATURN program will be executed under the AMP Increment 2 program. The MUOS radio funding is required for the Non-Recurring Effort associated with integration, testing, Technical Order's, Engineering drawings, Trial Kit Installations, Verification Kit Installations, and spectrum authorization.

This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130H AMP Increment 2 weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F,

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force	Date: April 2022
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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2
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0605833F, 0605898F, 0606398F. In FY 2021 \$0.803 million was expended for civilian pay expenses in this program element, and in FY 2022 \$1.000 million is forecasted for civilian pay expenses in this program element.

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

	FY 2021	FY 2022	FY 2023
Title: C-130H Avionics Modernization Program (AMP) Increment 2	48.698	9.359	0.407
Description: The program is currently executing the Engineering and Manufacturing Development (EMD) phase activities.			
FY 2022 Plans: Continuation of EMD activities to include but are not limited to software development, design, integration, development and operational test, program office support, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts and other efforts required to fulfill program requirements. The program also begins the transition to LRIP.			
FY 2023 Plans: Conclusion of EMD activities, primarily related to development and operational test completion and weapon system trainer and courseware completion. Other remaining actions may include but are not limited to software development, design, integration, program office support, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and other efforts required to fulfill program requirements.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to ramp down and anticipated completion of the EMD phase of the program.			
Accomplishments/Planned Programs Subtotals	48.698	9.359	0.407

	FY 2021	FY 2022
Congressional Add: Infrared Suppression	0.000	2.800
FY 2021 Accomplishments: N/A		
FY 2022 Plans: EMD activities to include but not limited to software development, design, integration, development and operational test, program office support, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts and other efforts required to fulfill program requirements.		
Congressional Adds Subtotals	0.000	2.800

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

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

Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To	
			Base	OCO	Total					Complete	Total Cost
• APAF 05 Line Item C13000: C-130	0.000	13.184	107.891	-	107.891	94.006	108.439	126.419	193.073	Continuing	Continuing
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	0.000	0.419	1.153	-	1.153	0.871	2.653	3.187	3.286	Continuing	Continuing

Remarks

The C-130H Avionics Modernization Program (AMP) Increment 2 procurement funding begins in FY22.

Project 672030, MUOS/SATURN Radio program will be executed under Project 675250, AMP Increment 2 program via the incorporation of the ARC-210 radio.

D. Acquisition Strategy

C-130H AMP Increment 2 contract was awarded 3rd quarter of 2019. Current efforts are primarily focused on the Engineering and Manufacturing Development (EMD) activities under a Fixed-Price Incentive (Firm) contract structure.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401115F / C-130 Airlift Squadron				675250 / C-130H Avionics Modernization Program (AMP) Increment 2							
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
C-130H AMP Increment 2 EMD Contract	C/FPIF	L3Harris : Waco, TX	-	34.728	Nov 2020	0.331	Nov 2021	0.407	Nov 2022	-		0.407	Continuing	Continuing	91.739
Joint Mission Planning System	C/FPIF	TBD : TBD	-	3.000		-		-		-		-	Continuing	Continuing	4.700
Infrared Suppression	C/TBD	TBD : TBD	-	-		2.800	Mar 2023	0.000		-		0.000	0.000	2.800	2.800
Subtotal			-	37.728		3.131		0.407		-		0.407	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Other Government Costs	TBD	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	3.777
Direct Cite Civilian Pay	C/CPAF	Not specified. : TBD	-	0.803		1.000		0.000		-		0.000	Continuing	Continuing	0.960
Subtotal			-	0.803		1.000		0.000		-		0.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
C-130H AMP Increment 2 Development Testing	PO	TBD : TBD	-	3.900	Nov 2020	4.500	Nov 2021	0.000		-		0.000	Continuing	Continuing	8.800
Subtotal			-	3.900		4.500		0.000		-		0.000	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
C-130H AMP Increment 2 PSC Contractor Services	Various	Not Specified : TBD	-	6.117	Feb 2021	3.055	Feb 2022	0.000		-		0.000	Continuing	Continuing	14.238

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
C-130H AMP Increment 2 PSC - Government Cost	Various	Not Specified : TBD	-	0.150	Oct 2020	0.473	Oct 2021	0.000		-		0.000	Continuing	Continuing	0.773
Subtotal			-	6.267		3.528		0.000		-		0.000	Continuing	Continuing	N/A
Project Cost Totals			-	48.698		12.159		0.407		-		0.407	Continuing	Continuing	N/A

Remarks
 FINANCIAL PERFORMANCE: AMP Increment 2 is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the AMP Increment 2 EMD phase contract is an FPIF contract with progress payments. Twenty percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron	Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>C-130H AMP Increment 2</i>				
Design/Integration	1	2021	2	2024
Delta Critical Design Review	2	2021	2	2021
Design/Integration Training Development	1	2021	2	2024
Development Testing	4	2021	4	2022
Functional Configuration Audit	4	2022	4	2022
Milestone C	4	2022	4	2022
<i>Infrared Suppression</i>				
Design/Integration	2	2023	2	2024