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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 I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron
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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	-	89.532	41.896	9.752	0.000	9.752	-	-	-	-	-	-
672030: <i>C-130H MUOS/SATURN Radio</i>	-	15.800	0.000	0.393	0.000	0.393	-	-	-	-	-	-
675250: <i>C-130H Avionics Modernization Program (AMP) Increment 2</i>	-	73.732	41.896	9.359	0.000	9.359	-	-	-	-	-	-

**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.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

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.

In order to meet the American Mid-Band Initiative, the Station Keeping Equipment (SKE) replacement program will develop and field a new/upgraded formation flight system to C-130H variants. C-130H AMP Increment 2 RDT&E will include studies in order to determine the integration impact the C-130H AMP Increment 2 program will have on the SKE replacement program, whose baseline includes the C-130H AMP Increment 2.

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron
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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 the 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 element 0605831F. In FY20 0.737M was expended for civilian pay expenses in this program element, and in FY21 0.803M is forecasted for civilian pay expenses in this program element.

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>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	101.425	41.973	24.370	0.000	24.370
Current President's Budget	89.532	41.896	9.752	0.000	9.752
Total Adjustments	-11.893	-0.077	-14.618	0.000	-14.618
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	-0.077			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-9.963	0.000			
• SBIR/STTR Transfer	-1.930	0.000			
• Other Adjustments	0.000	0.000	-14.618	0.000	-14.618

**Change Summary Explanation**

FY 2020 funding was reduced by \$11.893 million due to Above Threshold Reprogramming action of \$9.963 million and for \$1.930 million for Small Business Innovation Research.

FY 2022 funding request was reduced by \$14.618 million to account for the availability of prior year execution balances and economic adjustments.

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

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron				<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio			
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
672030: C-130H MUOS/ SATURN Radio	-	15.800	0.000	0.393	0.000	0.393	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program. The MUOS/Saturn Radio program updates radios due to future Diminishing Manufacturing Source (DMS)/integration issues and the incorporation of 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.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

The C-130H MUOS/SATURN Radio program modifies up to 155 C-130H USAF-owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to four 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.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> C-130H MUOS/SATURN Radio	15.800	0.000	0.393
<b>Description:</b> The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> Program support to incorporate the ARC-210 Radio into the AMP Inc 2 product baseline.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
Funding increased due to support for ARC-210 integration.			
<b>Accomplishments/Planned Programs Subtotals</b>	15.800	0.000	0.393

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	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
• RDTE 07 0401115F: C-130 Airlift Squadron	73.732	41.896	9.359	-	9.359	-	-	-	-	-	-

**Remarks**  
The development and fielding of the MUOS/SATURN Radio program will be executed under Project 675250, C-130H AMP Increment 2.

**D. Acquisition Strategy**  
The MUOS/SATURN Radio effort was added to the C-130H AMP Increment 2 contract through an Undefinitized Contract Action (UCA) 3rd quarter of 2020 and a definitive contract modification 1st 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 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio
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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>C-130H MUOS/SATURN Radio</b>	
MUOS/SATURN RADIO transfer to AMP Increment 2	■

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130H MUOS/SATURN Radio</b>				
MUOS/SATURN RADIO transfer to AMP Increment 2	2	2020	2	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron				<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675250: C-130H Avionics Modernization Program (AMP) Increment 2	-	73.732	41.896	9.359	0.000	9.359	-	-	-	-	-	-
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 incorporation of 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.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

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 155 C-130H USAF owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to four 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.

The FY 2022 funding request was reduced by \$14.618 million to account for the availability of prior year execution balances and other economic adjustments.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the 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 element 0605831F. In FY20 \$0.737M was expended for civilian pay expenses in this program element, and in FY21 \$0.803M is forecasted for civilian pay expenses in this program element.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> C-130H Avionics Modernization Program (AMP) Increment 2	73.732	41.896	9.359
<b>Description:</b> The program is currently executing the Engineering and Manufacturing Development (EMD) phase activities.			
<b>FY 2021 Plans:</b> 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.			
<b>FY 2022 Plans:</b> 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.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding request was reduced due to ramp down of EMD development and integration activities prior to transition to LRIP.			
<b>Accomplishments/Planned Programs Subtotals</b>	73.732	41.896	9.359

**C. 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>
• APAF 05 Line Item C13000: C-130	-	0.000	20.004	-	20.004	-	-	-	-	-	-
• APAF 06 Line Item 000999: Initial Spares/Repair Parts	-	0.000	0.419	-	0.419	-	-	-	-	-	-

**Remarks**

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

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

**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 2022 Air Force												Date: May 2021				
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								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	63.482	Nov 2019	27.926	Nov 2020	0.331	Nov 2021	-		0.331	-	-	91.739	
Joint Mission Planning System	C/FPIF	TBD : TBD	-	1.700	Jun 2020	3.000		0.000		-		0.000	-	-	4.700	
<b>Subtotal</b>			-	65.182		30.926		0.331		-		0.331	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	3.777	Apr 2020	-		-		-		-	-	-	3.777	
Direct Cite Civilian Pay	C/CPAF	Not specified. : TBD	-	0.737		0.803		-		-		-	-	-	0.960	
<b>Subtotal</b>			-	4.514		0.803		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	0.400	Dec 2019	3.900	Nov 2020	4.500	Nov 2021	-		4.500	-	-	8.800	
<b>Subtotal</b>			-	0.400		3.900		4.500		-		4.500	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 PMA Contractor Services	Various	Not Specified : TBD	-	3.486	Jan 2020	6.117	Feb 2021	4.055	Feb 2022	-		4.055	-	-	14.238	
C-130H AMP Increment 2 PMA - Government Cost	Various	Not Specified : TBD	-	0.150	Oct 2019	0.150	Oct 2020	0.473	Oct 2021	-		0.473	-	-	0.773	

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

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2
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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			
<b>Subtotal</b>			-	3.636		6.267		4.528		-		4.528	-	-	N/A
<b>Project Cost Totals</b>			-	73.732		41.896		9.359		-		9.359	-	-	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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130H AMP Increment 2</b>				
Design/Integration	1	2020	4	2023
Preliminary Design Review	2	2020	3	2020
Critical Design Review	4	2020	4	2020
Delta Critical Design Review	2	2021	2	2021
Design/Integration Training Development	1	2020	4	2023
Development Testing	4	2021	4	2022
Functional Configuration Audit	4	2022	4	2022
Milestone C	4	2022	4	2022