Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force												Date: February 2020
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0401119F / *C-5 Airlift Squadrons (IF)*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	28.245	10.223	32.560	0.000	32.560	22.600	0.671	0.000	80.502	0.000	174.801
671307: *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*	-	0.000	10.223	32.560	0.000	32.560	22.600	0.671	0.000	80.502	0.000	146.556
675359: *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)*	-	28.245	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	28.245

A. Mission Description and Budget Item Justification

The C-5M operates across the entire range of military operations. It is the only aircraft capable of carrying 100% of certified air-transportable cargo and includes a dedicated passenger compartment enabling commanders to have troops and their equipment arrive in an area of operation simultaneously when national security concerns demand fast force closure. C-5M missions include strategic airlift of cargo and passengers as well as emergency aeromedical evacuation (AE). The aircraft must perform these missions throughout the worldwide air traffic control environment with the proper equipment to operate in FAA/ICAO controlled airspace. Additionally, C-5M aircraft must operate at night, in adverse weather conditions, and in Chemical, Biological, Radiological, Nuclear (excluding electromagnetic pulse in accordance with Joint Requirements Oversights Council (JROC) approved/validated the C-5 RERP ORD 14 Aug 01, see Appendix B, Ref YY, page 11, para 4.3.1), and High Explosive (CBRNE) environments.

C-5M communication, navigation, surveillance/air traffic management (CNS/ATM) program is a comprehensive effort to ensure appropriate CNS/ATM system design architectures are developed and equipment is installed on the C-5M to allow aircraft operation in accordance with civil airspace access mandates for both the US national airspace system (NAS) and international civil airspace. Also, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5M CNS/ATM program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5M. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependence surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

C-5M Replace Multi-function Controls and Displays (RMCD) program helps to maintain aircraft availability and increased situational awareness though a new Multi Function Display Unit (MFDU)replace the current 20+ year MFDU design; current equipment is experiencing severe diminishing manufacturing source (DMS) issues. Additionally, there is a requirement to reduce Operational Flight Program (OFP) load times and improve load reliability and provide outlets for Mission Planning Equipment (MPE) to enhance operational mission support. The current generation of displays and controls supporting services used on the C-5M will no longer be repairable beginning in 4th Quarter, FY24 for MFDU. Without this modification, the C-5M will be unable to support the National Defense Strategy, AF Strategic Master Plan, Geographical Combatant Command Operational Plans.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force	Date: February 2020
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-5 weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

Funding to provide for program management & administration, studies and analysis, risk reduction efforts, Advisory and Assistance Services, change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs. Funding may also be used to address Diminishing Manufacturing Sources (DMS) through studies and analysis, bridge buys, life-of-type buys, etc.

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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	25.071	10.223	36.288	0.000	36.288
Current President's Budget	28.245	10.223	32.560	0.000	32.560
Total Adjustments	3.174	0.000	-3.728	0.000	-3.728
• Congressional General Reductions	0.000	0.000			
• 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	4.000	0.000			
• SBIR/STTR Transfer	-0.826	0.000			
• Other Adjustments	0.000	0.000	-3.728	0.000	-3.728

Change Summary Explanation

FY 2019 funding increased by $4.0M for a below threshold reprogramming action.

FY 2021 funding request reduced by $3.728M due to availability of prior year execution balance.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force			Date: February 2020
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / *C-5 Airlift Squadrons (IF)*	Project (Number/Name) 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
671307: *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*	-	0.000	10.223	32.560	0.000	32.560	22.600	0.671	0.000	80.502	0.000	146.556
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

C-5M Replace multi-function controls and display (RMCD) program is a comprehensive effort to ensure appropriate RMCD Line Replaceable Units (LRU) are developed and installed on the C-5M allowing aircraft operation in accordance with civil airspace access mandates for both US national airspace system (NAS) and international civil airspace. The C-5M RMCD program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification. The purpose of the program is to find a suitable replacement for the current multi-function display unit (MFDU) LRUs while maintaining existing interfaces to legacy equipment and providing for future growth opportunities. Additionally, the replacement LRUs must have the Ethernet load capability to reduce Operational Flight Programs (OFP) load times, and the program will implement a power solution for Mission Planning Equipment (MPE). Operational Flight Programs (OFP) updates/aggregation are required to support the latest aircraft display technologies and will be designed to ensure seamless integration into the platform. Aircraft wiring will be replaced/upgraded as required. Use of mixed displays (current and new) is not permissible due to human factors considerations. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The RMCD program is a comprehensive sustainment modification to mitigate the obsolescence of the current control and display units. This effort centers around modifying the current display units to obtain sufficient capacity/capability to support integration of new system capabilities with margin for growth by upgrading displays and correcting any mission essential deficiencies identified during development, including additions of an Ethernet loading capability and a power solution for the MPE. This modification may include software non-recurring engineering (NRE), data, cyber security, testing, installation, spares, systems integration lab (SIL), Interim Contractor Support (ICS), program support, etc.

The modification helps to maintain aircraft availability as the new multifunctional controls and displays replaces the current controls and displays, which are experiencing severe diminishing manufacturing source (DMS) issues. Failure to upgrade the displays to support aircraft availability will create a significant operational impact to the support of Geographic Combatant Command (GCCs) and maintaining U.S. National objectives. Further, Diminishing Manufacturing Source (DMS) issues will be resolved to support continued operations through studies and analysis, risk reduction efforts, bridge buys, life-of-type buys, development, and redesign efforts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-5M weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

Available funds may be used for program management administration, studies and analysis, risk reduction efforts, Advisory and Assistance Services, change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs. Funding may also be used to address Diminishing Manufacturing Sources (DMS) through studies and analysis, bridge buys, life-of-type buys, etc.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: C-5 Replace Multi-Functional Controls and Displays	-	10.223	32.560
Description: Description: Replace Multi-Functional Controls and Displays replacement will enable the C-5M to achieve wartime mission requirements by maintaining fleet availability (mission capable rate) and program management administration (PMA). ***FY 2020 Plans:*** Award EMD Contract for hardware and software design, development, integration, data management, systems engineering, program management, and spares. ***FY 2021 Plans:*** RMCD system design supports replacement of multi-functional controls and displays. Efforts include hardware and software design, development, integration, systems engineering and program management for compatibility with C-5 existing systems. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funding increase due to full year of development efforts to include but not limited to hardware and software design, development, integration, systems engineering and program management for compatibility with C-5 existing systems.			
Accomplishments/Planned Programs Subtotals	-	10.223	32.560

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• APAF 05 C00500: *C-5*	-	0.000	0.000	-	0.000	0.000	17.879	19.266	0.000	0.000	37.145
• APAF 06 0401119F: *C-5 Airlift Squadrons*	-	-	-	-	-	-	1.971	-	-	0.000	1.971

Remarks

D. Acquisition Strategy

The Program Office completed an Early Strategy & Issues Session (ESIS) in September 2019, with the Acquisition Strategy Plan (ASP) anticipated at the end of January 2020. The Program Office received approval to pursue an Other Transaction Authority to procure prototype hardware in December 2019. The overall strategy is to procure the display units and graphics processors, integrate and test those components, and install on two (2) EMD aircraft. The Acquisition Strategy (AS) for the RMCD has not been determined/approved as of Jan 2020.

Program Office anticipates that the primary contract type will be that of Cost Plus Incentive Fee (CPIF) with some Firm Fixed Price (FFP) elements. The Other Transaction for Prototype is anticipated to be FFP.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*

The integration of hardware, displays and graphics processors, and the software may be required to be Sole Source (SS) to Lockheed Martin, who holds the Data Rights to critical software and software documentation. Access to these items may be required to acquire the platform certifications necessary to put the final system onto test aircraft.

Program office will consider the use of commercial components.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
RMCD hardware/software design, development, integration, data management, technical data rights, systems engineering, program management, and spares	SS/CPIF	TBD : TBD	-	-		8.613	May 2020	26.840	Oct 2020	-		26.840	0.000	35.453	56.255
		Subtotal	-	-		8.613		26.840		-		26.840	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Other Govt Test and SIL	Various	TBD : TBD	-	-		0.805	Jul 2020	2.609	May 2021	-		2.609	0.000	3.414	-
PMA	Various	Not specified. : TBD	-	-		0.805	Jul 2020	3.111	May 2021	-		3.111	Continuing	Continuing	-
		Subtotal	-	-		1.610		5.720		-		5.720	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		10.223		32.560		-		32.560	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*

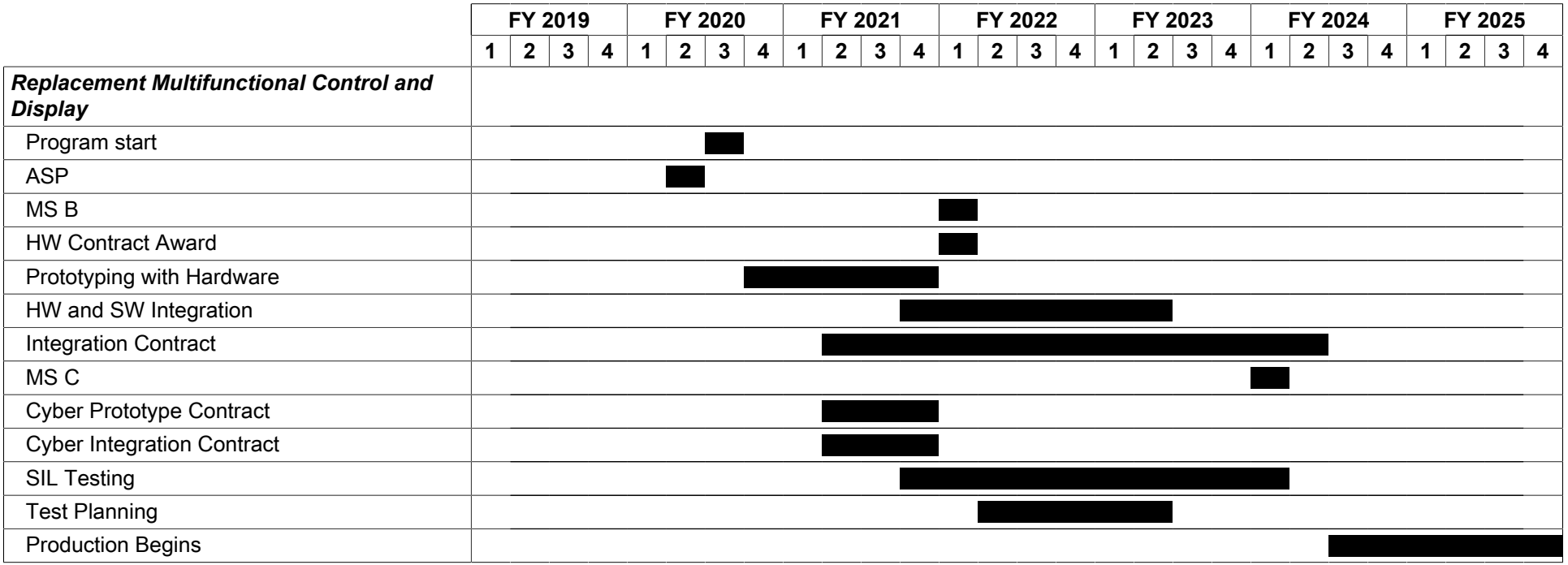

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 671307 / *C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Replacement Multifunctional Control and Display				
Program start	3	2020	3	2020
ASP	2	2020	2	2020
MS B	1	2022	1	2022
HW Contract Award	1	2022	1	2022
Prototyping with Hardware	4	2020	4	2021
HW and SW Integration	4	2021	2	2023
Integration Contract	2	2021	2	2024
MS C	1	2024	1	2024
Cyber Prototype Contract	2	2021	4	2021
Cyber Integration Contract	2	2021	4	2021
SIL Testing	4	2021	1	2024
Test Planning	2	2022	2	2023
Production Begins	3	2024	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force			Date: February 2020
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401119F / *C-5 Airlift Squadrons (IF)*	Project (Number/Name) 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
675359: *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)*	-	28.245	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	28.245
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

C-5M communication, navigation, surveillance/air traffic management (CNS/ATM) program is a comprehensive effort to ensure appropriate CNS/ATM system design architectures are developed and equipment is installed on the C-5M to allow aircraft operation in accordance with civil airspace access mandates for both the US national airspace system (NAS) and international civil airspace. Also, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5M CNS/ATM program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5M. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependence surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The current ARC-210 radio for VHF voice communications is facing diminishing manufacturing source (DMS) supply issues and additionally will no longer be capable of providing secure voice communications due to the development of new crypto algorithms. Addition of next generation ARC-210 radios with embedded Integrated Waveform (IW) and Second-generation Anti-jam Tactical UHF Radio for NATO (SATURN) and associated cryptologic equipment will enable the C-5M to meet NSA mandates for secure communications and allow aircrews to continue to communicate securely over VHF, UHF, HF, or MILSATCOM.

The current generation of satellites that support services used on the C-5M to provide oceanic controller/pilot data link communications (CPDLCs) to air traffic control and aircraft communications addressing and reporting system (ACARS) beyond-line-of-sight command and control messages is no longer functional post 2016. The next generation of satellites will accommodate legacy C-5M SATCOM equipment for an interim period of time to allow for integration of upgraded SATCOM equipment compatible with this satellite constellation. Without this modification, the C-5M will be unable to fly oceanic tracks and will not be able to meet aircraft separation distance requirements for civil airspace access.

Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) is a next generation surveillance technology that transitions key aspects of air traffic control from terrestrial based technologies to satellite enabled technologies to provide controllers a more accurate picture of aircraft positioning. ADS-B Out will allow aircraft to provide continuous broadcast of aircraft position to both controllers and other aircraft equipped with ADS-B In capable avionics. International mandates for ADS-B Out for civil airspace access call for equipage by 2020.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

Available funds will be used for program management administration, studies and analysis, risk reduction efforts, Advisory and Assistance Services, change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs. Funding may also be used to address Diminishing Manufacturing Sources (DMS) through studies and analysis, bridge buys, life-of-type buys, etc.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-5M weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: C-5M CNS/ATM	28.245	0.000	0.000
Description: C-5M CNS/ATM program will install multiple aircraft avionic equipment pieces to enable the C-5M to meet multiple NSA encryption and international/national airspace access mandates while mitigating diminishing manufacturing source issues. ***FY 2020 Plans:*** C-5M CNS/ATM program will install multiple aircraft avionic equipment pieces to enable the C-5M to meet multiple NSA encryption and international/national airspace access mandates while mitigating diminishing manufacturing source issues. ***FY 2021 Plans:*** No funding Requested			
Accomplishments/Planned Programs Subtotals	28.245	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• APAF 05 Line Item C00500: *C-5*	20.483	32.386	33.877	-	33.877	14.911	7.661	0.000	-	0.000	109.318
• APAF 06 Line Item 000999: *Initial Spares*	4.386	2.053	0.409	-	0.409	0.000	0.000	0.000	-	0.000	6.848
• APAF 07 Line Item 000075: *Other Production*	0.000	0.585	9.304	-	9.304	7.655	0.000	0.000	-	0.000	17.544

Remarks

D. Acquisition Strategy

CNS/ATM program: Engineering and Manufacturing Development (EMD) for incorporation of the ARC-210 Gen V radio, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5M began in Dec 2016. The acquisition strategy for this program will consider every opportunity to use commercial components to modernize the C-5M CNS/ATM equipment to meet CY2020 mandates for global civil airspace access. The strategy is for the prime contractor, Lockheed Martin Aero

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

(LMA), to procure CNS/ATM equipment, develop software, test and integrate those components, and install on two (2) EMD aircraft. The equipment integration will require RDT&E funding for commercial off-the-shelf and non-developmental item proofing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
CNS/ATM hardware/ software design, development, integration, data management, technical data rights, systems engineering, program management, and spares	Various	Lockheed Martin Aero : Marietta, GA	-	19.325	Nov 2018	-		-		-		-	0.000	19.325	86.532
		Subtotal	-	19.325		-		-		-		-	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
CNS/ATM Other Government Cost	Various	AFLCMC/WLS : Dayton, OH	-	1.318	Nov 2018	-		-		-		-	0.000	1.318	4.078
CNS/ATM Training	Various	Lockheed Martin Aero : Marietta, GA	-	0.000	Nov 2018	-		-		-		-	0.000	0.000	0.300
CNS/ATM Peculiar Support Equipment	Various	Lockheed Martin Aero : Marietta, GA	-	0.000	Feb 2019	-		-		-		-	0.000	0.000	0.018
CNS/ATM Trainers & Simulators	Various	Various : Various	-	2.120	Nov 2018	-		-		-		-	0.000	2.120	3.221
		Subtotal	-	3.438		-		-		-		-	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CNS/ATM System Test/ Qual/SIL	Various	Lockheed Martin Aero : Marietta, GA	-	2.024	Nov 2018	-		-		-		-	0.000	2.024	8.662
CNS/ATM System Test - Government	Various	Edwards AFB : CA	-	3.123	Oct 2018	-		-		-		-	0.000	3.123	4.250
		Subtotal	-	5.147		-		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
CNS/ATM Program Management Administration	Various	AFLCMC/WLS : Dayton, OH	-	0.189	Jun 2019	-		-		-		-	0.000	0.189	0.949
CNS/ATM Travel	Various	AFLCMC/WLS : Dayton, OH	-	0.146	Oct 2018	-		-		-		-	0.000	0.146	1.213
		Subtotal	-	0.335		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	28.245		0.000		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

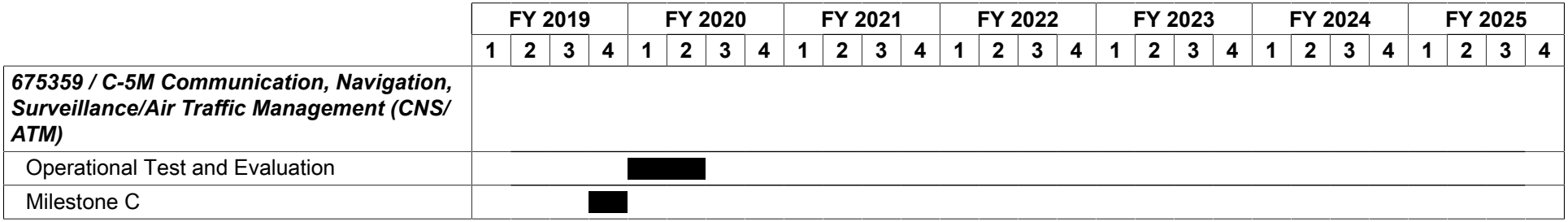

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0401119F / *C-5 Airlift Squadrons (IF)*	**Project (Number/Name)** 675359 / *C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
675359 / C-5M Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM)				
Operational Test and Evaluation	1	2020	2	2020
Milestone C	4	2019	4	2019

Note

CNS/ATM will support completion of formal qualification testing, installation and functional check of hardware, design and development of aircrew and maintenance training system modification, and developmental test and evaluation.