Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*							
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	1,395.881	377.005	486.962	491.513	-	491.513	386.118	324.490	295.983	300.659	Continuing	Continuing
2553: *Air Vehicle - Technology Refresh 3 (TR-3)*	0.000	0.000	43.028	33.618	-	33.618	1.275	5.189	10.215	10.297	Continuing	Continuing
2554: *Air Vehicle Block 4 Planning & Sys Eng*	0.000	0.000	174.882	198.803	-	198.803	183.585	136.845	118.768	120.629	Continuing	Continuing
2555: *Test and Evaluation (T&E)*	0.000	0.000	130.954	134.077	-	134.077	91.771	87.324	87.642	89.099	Continuing	Continuing
2556: *Propulsion (PP)*	0.000	0.000	16.493	7.415	-	7.415	0.407	0.399	0.393	0.379	Continuing	Continuing
2557: *Maintenance Systems (MxS)*	0.000	0.000	25.456	25.090	-	25.090	21.343	17.238	14.143	14.364	Continuing	Continuing
2558: *Combat Data Systems (CDS)*	0.000	0.000	29.925	26.334	-	26.334	19.688	14.990	9.049	9.174	Continuing	Continuing
2559: *Training Systems and Simulation (TSS)*	0.000	0.000	36.242	36.995	-	36.995	30.642	24.747	20.516	20.842	Continuing	Continuing
2560: *Infrastructure and Support Costs*	0.000	0.000	2.492	2.616	-	2.616	2.672	2.721	2.768	2.815	Continuing	Continuing
2561: *DevSecOps*	0.000	0.000	13.956	10.032	-	10.032	17.003	16.980	16.966	17.267	Continuing	Continuing
2562: *F-35 USN Unique*	0.000	0.000	8.534	16.533	-	16.533	17.732	18.057	15.523	15.793	Continuing	Continuing
2936: *F-35C C2D2*	1,395.881	377.005	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,772.886
9999: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 198

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the United States Navy, United States Air Force, United States Marine Corps and International Partners countries. There are three variants the F-35A Conventional Takeoff and Landing variant; F-35B Short Take Off and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. Maximum commonality among the variants, consistent with National Disclosure Policy, will minimize total air system life cycle costs. Planning, systems engineering, development, and testing for Block 4 continues across the F-35 Air System to include the air vehicle, propulsion system, combat data systems, maintenance systems, and training systems as Initial Operational Capability (IOC) has been met for each variant.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*

The JSF Continuous Capability Development & Delivery(C2D2) efforts provide incremental warfighting capability improvements to maintain joint air dominance against evolving threats. Block 4 capability requirements were initiated through ongoing Service-led operational analysis of warfighting gaps identified in the Fifth Generation Fighter Modernization Initial Capabilities Document (ICD), and through F-35 JSF Block 4 Mission Decomposition analysis completed in FY2014. These analyses served as the basis for the Block 4 Capability Development Document (CDD), staffed through the Air Force Requirements Oversight Council (AFROC) and signed by the USAF Chief of Staff in January 2015. Joint Requirements Oversight Council (JROC) approved the CDD 21 March 2017.) Modernization activities in FY2022 and FY2023 continue with the incremental releases of Block 4 capabilities. Block 4 efforts include a robust weapons integration portfolio and provide new opportunities for International Partners to assess, integrate, and field unique capabilities based on global sovereign requirements.

The United Kingdom, Italy, Netherlands, Canada, Australia, Denmark and Norway are participants in F-35 modernization. The program shown here reflects United States Navy funding. Total funding for all Service and International Partners is reported at the accomplishment/planned program level since activities support all aircraft variants. Foreign Military Sales are ongoing separately.

PE 0604840M/N replacing PE 0604810M/N beginning in FY2019 due to budget being moved from BA05 to BA07.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate 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	370.235	481.962	0.000	-	0.000
Current President's Budget	377.005	486.962	491.513	-	491.513
Total Adjustments	6.770	5.000	491.513	-	491.513
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	19.999	0.000			
• SBIR/STTR Transfer	-13.229	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	491.513	-	491.513

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0604840N *I F-35C C2D2*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 9999: *Congressional Adds*		
Congressional Add: *Joint enterprise data interoperability for F-35 depots*	0.000	5.000
Congressional Add Subtotals for Project: 9999	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Change Summary Explanation

The FY2023 budget submission accomplishments/planned programs (R-2A) has been updated to mirror the Joint Strike Fighters Program Management Office organizational
structure in order to provide more transparency and visibility to development efforts across the F-35 enterprise. Also, the Project Cost Analysis (R-3) exhibit has been updated to include additional cost categories to better display executing efforts. FY2021 values have been updated based on actuals to date.

PE 0604840M/N replacing PE 0604810M/N beginning in FY2019 due to budget being moved from BA05 to BA07.

Technical: Not applicable.
Schedule: Not applicable.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*	

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
2553: *Air Vehicle - Technology Refresh 3 (TR-3)*	0.000	0.000	43.028	33.618	-	33.618	1.275	5.189	10.215	10.297	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Air Vehicle - Technology Refresh 3 (TR-3) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

Technology Refresh 3 (TR-3) conducts post Critical Design Review (CDR) design activities. This effort will develop and deliver a TR-3 system through full flight-worthy certification and production readiness review for Lot 15. The design of TR-3 subsystems Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit Display Electronics Unit and Display Unit (PCD-EU, PCD-DU) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to support Block 3F functionality and incorporation of all Block 4 capabilities. This work includes nonrecurring engineering for the development, test, and certification of the ICP, AMS, PCD-EU, and PCD-DU, and includes processing capacity to ensure long term viability for future capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Technology Refresh 3 (TR-3)	0.000	43.028	33.618	0.000	33.618
Articles:	-	-	-	-	-
Description: Technology Refresh 3 (TR-3) conducts post Critical Design Review (CDR) design activities. This effort will develop and deliver a TR-3 system through full flight-worthy certification and production readiness review for Lot 15. The design of TR-3 subsystems Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit Display Electronics Unit and Display Unit (PCD-EU, PCD-DU) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to support Block 3F functionality and incorporation of					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
all Block 4 capabilities. This work includes nonrecurring engineering for the development, test, and certification of the ICP, AMS, PCD-EU, and PCD-DU, and includes processing capacity to ensure long term viability for future capabilities. ***FY 2022 Plans:*** The TR-3 program will continue laboratory system integration and test, modify Developmental and Operational test aircraft with TR-3 and Next Gen Distributed Aperture System (DAS) hardware, perform ground test activities, and perform flight test through FY2022. This will include the necessary labor and Non-recurring engineering to support Developmental and Operational test aircraft modifications, as well as the necessary mission planning systems to support flight test operations. Finally, this will include multiple software releases to both lab and fight test, and will also result in the final software updates for Core Process Software (CPSW), Pilot Systems Software (PSSW), and TR-3 hardware. ***FY 2023 Base Plans:*** The TR-3 program will complete laboratory system integration and test, flight test, and system certification requirements. The program will also deliver necessary hardware and complete modifications of Operational Test aircraft to support fleet fielding recommendations. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 by $9.410M is due to the program nearing completion. This is driven by the ramp down and completion of sub tier supplier scope, and completion of system integration at the Prime.					
Accomplishments/Planned Programs Subtotals	0.000	43.028	33.618	0.000	33.618

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Technology Refresh-3 program is a delivery order part of a larger F-35 Joint Program Office Basic Ordering Agreement. The acquisition strategy for this delivery order employs a Cost Plus Incentive Fee for engineering and development of the Integrated Core Processor, Panoramic Cockpit Display, and Aircraft Memory System.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

This eliminates the current Dimensioning Manufacturing Source for Technology Refresh-2. Additionally, brings open mission systems standards to the F-35 and enables new Embedded Training and Next Generation Distributed Aperture System capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TR-3 Prime LM Development	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		37.805	Oct 2021	33.618	Oct 2022	-		33.618	0.000	71.423	71.423
TR-3 Prime LM Next Gen DAS Shipsets Proc	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		3.073	Oct 2021	0.000		-		0.000	0.000	3.073	3.073
TR-3 Prime LM OT NRE	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		1.024	Nov 2021	0.000		-		0.000	0.000	1.024	1.024
TR-3 Prime LM OT Next Gen DAS NRE	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		1.024	Nov 2021	0.000		-		0.000	0.000	1.024	1.024
		Subtotal	0.000	0.000		42.926		33.618		-		33.618	0.000	76.544	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TR-3 Project Support	MIPR	Various : Various	0.000	0.000		0.102	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.102		0.000		-		0.000	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		43.028		33.618		-		33.618	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

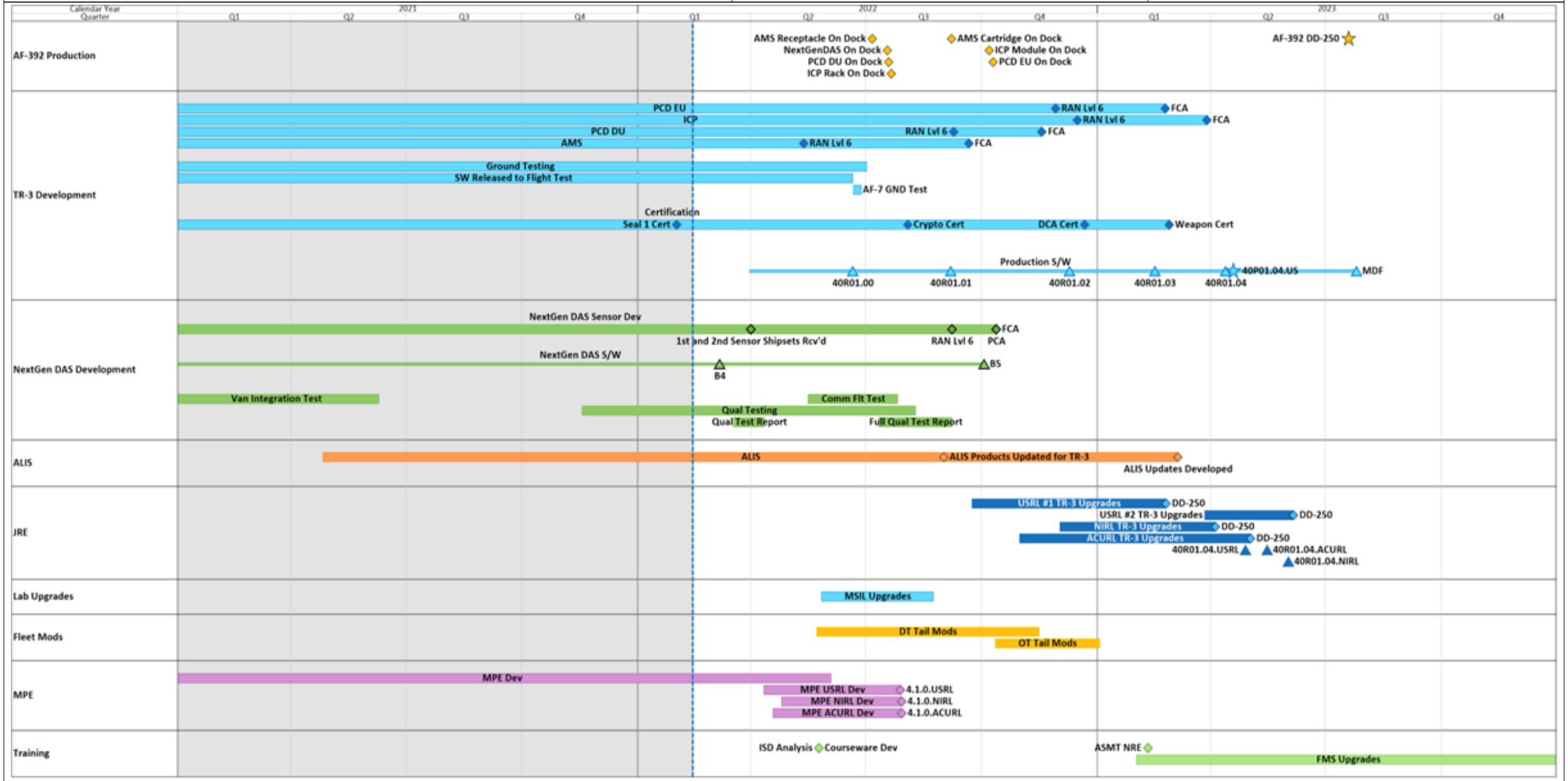

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2553				
Technology Refresh 3 (TR-3): Perform Safety of Flight Qualification Testing	2	2022	3	2022
Technology Refresh 3 (TR-3): Conduct TR-3 System Test Readiness Review	3	2022	3	2022
Technology Refresh 3 (TR-3): Perform Ground Test	3	2022	3	2022
Technology Refresh 3 (TR-3): Perform TR-3 Flight Test	3	2022	2	2023
Technology Refresh 3 (TR-3): Perform Final Hardware Qualification Testing	2	2021	3	2023
Technology Refresh 3 (TR-3): Deliver First Shipsets of TR-3 Hardware to Lot 15 Production Line	4	2022	4	2022
Technology Refresh 3 (TR-3): 1st Aircraft Lot 15 DD250	3	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2554 / *Air Vehicle Block 4 Planning & Sys Eng*	

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
2554: *Air Vehicle Block 4 Planning & Sys Eng*	0.000	0.000	174.882	198.803	-	198.803	183.585	136.845	118.768	120.629	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Air Vehicle - Block 4 Planning & Sys Eng was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

The F-35 Air Vehicle Program Management Office (AV PMO) development portfolio includes efforts to improve the F-35 air vehicle lethality, survivability, and interoperability in response to emerging threats outlined in the National Security Strategy and Operational Plans. The AV PMO delivers these capabilities utilizing a Continuous Capability Development and Delivery (C2D2) strategy combining traditional hardware upgrades and agile software integration processes. As a function of congressional desire for increased transparency and the F-35 organizational pivot, this is the second budget cycle in which AV PMO budget requirements have been comprehensively and discretely defined within a dedicated Project Unit.

F-35 Block 4 Modernization is designed to counter the full spectrum of evolving near-peer enemy threats to ensure US and Allied forces have freedom of operation even in the face of advanced adversary Anti-Access/Area Denial (A2/AD) capabilities. As designed, Block 4 consists of three principle lines of effort: development of software-based capabilities, development and integration of new and modernized aircraft hardware which enable the development of new capabilities, and new weapons integration. Efforts under the Air Vehicle / Block 4 Planning and Systems Engineering project range from requirements decomposition and preliminary design of capabilities through completion of Developmental Flight Test. These activities are a continuation of the previous Block 4 developmental contracts, and include activities required to enable the successful completion of Flight Test, to include select facility upgrades required for research, development, test and evaluation. Block 4 upgraded capabilities and continuous improvements will maintain Air System viability against the evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), the Fifth Generation Fighter Modernization ICD, and the Block 4 Capability Development Document (CDD). Additionally, the Block 4 capabilities will reduce life cycle cost, improve Air System Integration, and improve operational suitability. Weapons integration efforts included under this project include AARGM-ER integration, employment envelope expansion for current F-35 weapons, NRE for obsolescence, and Increased Air-to-Air Missile Carriage.

Included in the Air Vehicle (AV)/Block 4 Planning and Systems Engineering effort is both Prime and Government Systems Engineering Support needed for Avionics/ Electronic Warfare and Weapons Integration efforts to include studies, analysis and risk reduction efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Air Vehicle Planning & Sys Eng	0.000	174.882	198.803	0.000	198.803
Articles:	-	-	-	-	-

Description: The F-35 Air Vehicle Program Management Office (AV PMO) development portfolio includes efforts to improve the F-35 air vehicle lethality, survivability, and interoperability in response to emerging threats outlined in the National Security Strategy and Operational Plans. As designed, Block 4 consists of three principle lines of effort: development of software-based capabilities, development and integration of new and modernized aircraft hardware which enable the development of new capabilities, and new weapons integration. Included in the Air Vehicle (AV)/Block 4 Planning and Systems Engineering effort is both Prime and Government Systems Engineering Support needed for Avionics/Electronic Warfare and Weapons Integration efforts to include studies, analysis and risk reduction efforts.

FY 2022 Plans:
Continue with Agile development of capabilities through Flight Test. Continue requirements decomposition and preliminary design activities for advanced Block 4 capabilities. Continue Post-PDR risk reduction activities to include Air-Ship Integration and planning. Continue development and maturity of key long lead capabilities and service unique weapons. Complete development of software drops to be available for fielding to meet warfighter need. Support efforts for airframe, air vehicle systems, air-ship integration, mission systems, future capabilities studies and weapons integration efforts. Continue support for Block 4 Capabilities and support preliminary systems engineering efforts associated with obsolescence NRE, AARGM-ER, and increased air-to-air missile carriage. Continued engineering support for avionics, weapons, studies & analyses, and risk reduction efforts.

FY 2023 Base Plans:
Continue with Agile development of capabilities through Developmental and Operational Flight Test. Continue requirements decomposition and preliminary design activities for advanced Block 4 capabilities. Continue development and maturity of key long lead capabilities and service unique weapons, enabling A2AD strategies including increased payloads, integrated fires, passive weapons, interoperability and multi-spectrum dominance in response to near-peer threats. Initiate development of enhanced cyber detection and mitigation capability for the F-35 in response to critical and emerging threats. Continue and expand application of cyber resilience engineering processes and tools for software, hardware, and weapons, though flight test. Continue and expand application of cyber resilient engineering processes and tools for software, hardware, and weapons, though flight test. Continuing development and timely delivery of software drops to meet warfighter need. Continue supporting efforts for airframe, air vehicle systems, Air-Ship integration, including Electromagnetic Aircraft Launch System and Advanced Arresting Gear (EMALS/AAG) launch bulletins and related work, mission

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
systems, future capabilities studies and weapons integration efforts. Continue support for Block 4 Capabilities and support preliminary systems engineering efforts associated with obsolescence NRE, AARGM-ER, AGM-158 family of weapons, and increased air-to-air missile carriage. Continued systems engineering, integration, and test (SEIT) development for avionics, weapons, studies & analyses, and risk reduction efforts. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY2022 to FY2023 is due to award of additional Block 4 scope to include the design, development, and integration of several advanced Electronic Warfare hardware elements enabling F-35 wide-band spectrum dominance. Also, the addition of the scope to support Advanced F-35 Datalink enables increased lethality in support of integrated fires and beyond line-of-sight Anti-access/Area denial (A2AD) arenas expected in a near peer conflict. Additionally, the increase reflects integration of advanced weapons functions including AARGM-ER, AGM-158, Increased Air-to-Air Missile Carriage, and Net Enabled Weapon functionality.					
Accomplishments/Planned Programs Subtotals	0.000	174.882	198.803	0.000	198.803

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The C2D2 acquisition strategy is to employ both Cost and Fixed Price Incentive contracts for the Block 4 engineering and development efforts. A new modernization contract structure will be established for all post SDD Block 4 efforts. In addition, a separate Basic Ordering Agreement or Indefinite Quantity/Indefinite Delivery contract is planned to provide a long term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future C2D2 capabilities. FY23 begins systems engineering, integration, and test (SEIT) development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV Prime LM Phase II Cape/Development	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		157.304	Oct 2021	167.762	Oct 2022	-		167.762	121.971	447.037	447.037
AV Prime LM Phase II Fee	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.000		5.122	Oct 2021	5.122	Oct 2022	-		5.122	0.000	10.244	10.244
AV Prime LM Air Vehicle Integration	C/CPFF	Lockheed Martin : Ft Worth TX	0.000	0.000		1.250	Oct 2021	1.250	Oct 2022	-		1.250	1.024	3.524	3.524
AV Systems Engineering	Various	Various : Various	0.000	0.000		3.191	Dec 2021	4.312	Dec 2022	-		4.312	7.410	14.913	14.913
AV Cyber Survivability	Various	Various : Various	0.000	0.000		0.000		4.917	Dec 2022	-		4.917	32.500	37.417	37.417
		Subtotal	0.000	0.000		166.867		183.363		-		183.363	162.905	513.135	N/A

Remarks

1. Breaking out Cyber survivability as separate line item in FY23

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV Mission Systems Support	Various	Various : Various	0.000	0.000		5.265	Nov 2021	3.940	Nov 2022	-		3.940	8.350	17.555	17.605
AV Vehicle Systems Support	Various	Various : Various	0.000	0.000		0.250	Nov 2021	8.500	Nov 2022	-		8.500	2.500	11.250	11.250
AV CSO Development Support	Various	Various : Various	0.000	0.000		2.500	Nov 2021	3.000	Nov 2022	-		3.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		8.015		15.440		-		15.440	Continuing	Continuing	N/A

Remarks

1. Increase FY23 AV Vehicle system support due to ramp up of EMALS AAG support.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		174.882		198.803		-		198.803	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2554 / *Air Vehicle Block 4 Planning & Sys Eng*	

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

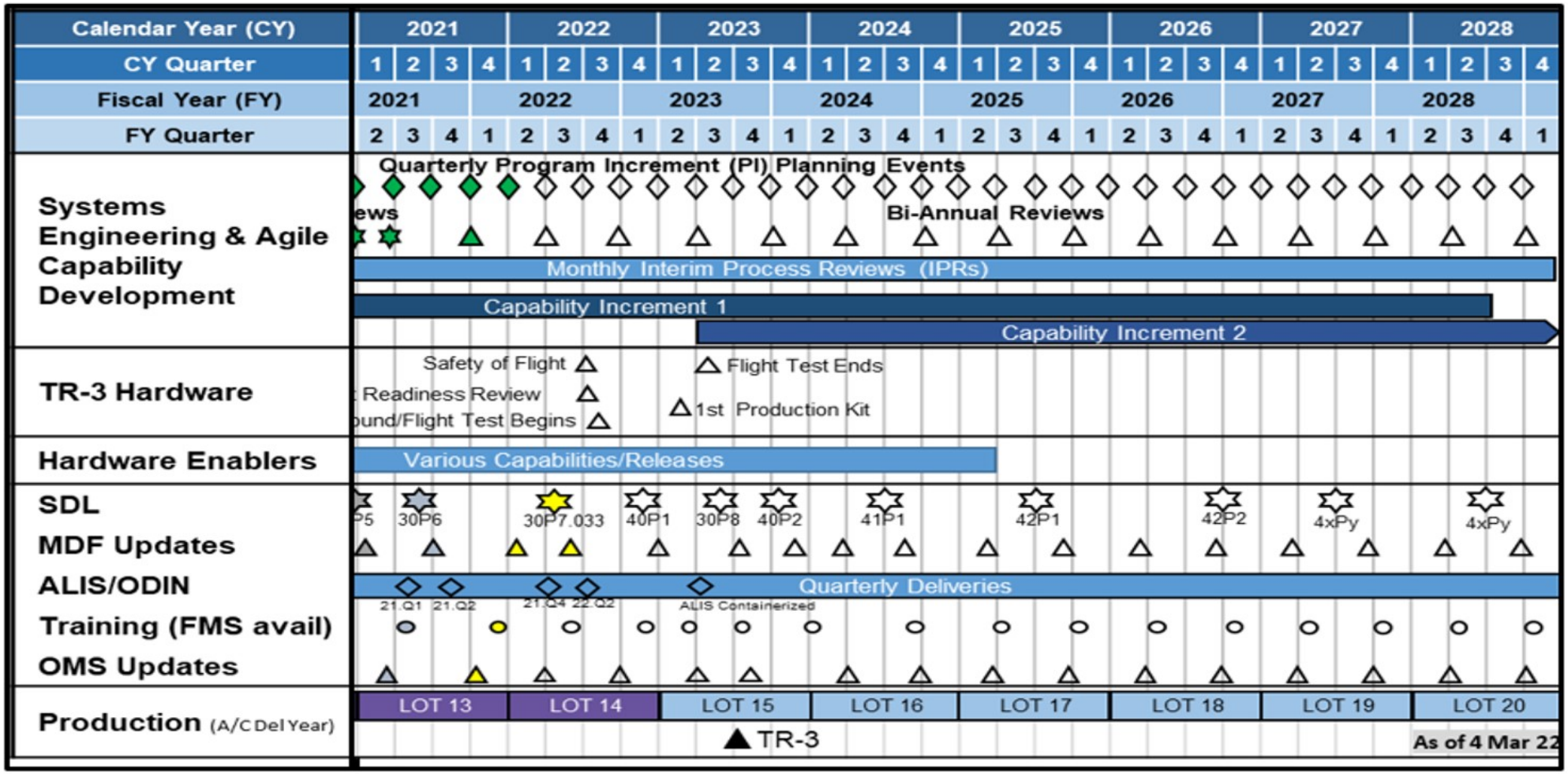

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2554				
Systems Engineering & Agile Capability Development: Planning Events	1	2022	4	2027
Systems Engineering & Agile Capability Development: ASIRs	1	2022	4	2027
Systems Engineering & Agile Capability Development: IPRs	1	2022	4	2027
Hardware Enablers: A/C Cooling	1	2022	4	2025
Hardware Enablers: FS425 Bulkhead	1	2022	1	2023
Production: LOT 14	2	2022	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2555 / *Test and Evaluation (T&E)*	

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
2555: *Test and Evaluation (T&E)*	0.000	0.000	130.954	134.077	-	134.077	91.771	87.324	87.642	89.099	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Test and Evaluation (T&E) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

Integrated Test activities in support of C2D2, to include Lockheed Martin support at all test sites. Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modifications necessary to bring DT aircraft fleet to a more production-representative and sustainable configuration, and to develop flight test instrumentation and release test software to meet Block 4 requirements. Additional upgrades required to support development and evaluation of improvements driven by changes in the threat environment and as identified in the Electronic Warfare ICD, the Fifth Generation Fighter Modernization ICD, and the Block 4 Capability Development Document (CDD). Efforts include non-recurring engineering and procurement of a test article to evaluate service life of F-35B STOVL Aircraft. Integrated test also supports the evaluation of upgrades to ALIS, fielding of ODIN Base Kits, regression testing of fielded weapons upgrades, and various validation/verification efforts.

Costs in the Accomplishments/Planned and Program R2A section have been broken out into the following R-2A categories: Development Foundation Contract, Development Test, Operational Test, Future Flight Test Capabilities/Investments, Ground Test and Simulation Infrastructure. All of the development efforts presented in the budget submission existed in prior years and were rolled up under previously submitted Accomplishments/ Planned and Program costs in Test and Evaluation category.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Development Foundation Contract (DFC) Flight Test and Tech Refresh	0.000	45.129	43.959	0.000	43.959
Articles:	-	-	-	-	-
Description: Flight test infrastructure at Edwards Air Force Base (AFB) and Pax River Naval Air Station (NAS) and F-35 tech refresh for laboratory development at Fort Worth, TX for Lockheed Martin Aeronautics and its subcontractors (LM Aero). This includes investment planning and other test planning activities required for Block 4 development, integration, developmental test and evaluation. Funding is required for the Lockheed Martin Integrated Test Force contractor labor, suppliers, and material. Other support efforts are provided for airframe, air vehicle systems, air-ship integration, mission systems, weapons integration, offboard mission					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
support, autonomic logistics development, joint reprogramming enterprise and modeling and joint simulation environment activities, including Nimble Lightning efforts. Other costs in support of ranges, chase planes and DT site operations. ***FY 2022 Plans:*** Continue support to F-35 capability enhancements identified in approved requirements documents. This includes flight testing new software development builds and hardware capabilities. DFC will support C2D2 flight test, and implement technology refresh and modernization to upgrade, sustain, replace, and modify hardware and software at the module level. ***FY 2023 Base Plans:*** Support F-35 capability enhancements identified in approved requirements documents. DFC will provide flight test for C2D2 Block 4 capabilities including weapons testing, as well as continue annualized technology refresh and specific lab modernization efforts. These efforts will upgrade and modify hardware and software at the module level and facilitate test integration with the development process. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease due to most recent Development Foundation Contract negotiated a lower cost than planned due to deferment of efforts to future years.					
Title: Developmental Test (DT)	0.000	17.824	21.958	0.000	21.958
Articles:	-	-	-	-	-
Description: Government test site Integrated Test activities to support development of Air Vehicle C2D2 and TR-3 programs, as well as inherent maintenance systems, training systems, and combat data systems test support. Testing includes ground, logistics, and flight testing of incremental flight software releases, weapon integration, DMS/ fleet sustainment, service-life extension, hardware refresh, and regression efforts to ensure total system integration meets program requirements. Test site capabilities to meet program requirements include infrastructure, ranges, engineering, administration, logistics, maintenance, controls, information technologies, classified facilities, and service unique					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
supporting capabilities. The sites to be funded include but are not limited to NAWCAD Pax River, NAWCAD China Lake, and Edwards AFB. ***FY 2022 Plans:*** Continue to support Integrated Test capacity and flight test execution (manpower, weapons, flight hours, range time, and chase, target & tanker support assets) to develop and verify and regression test capabilities as directed by the F-35 JPO. Major program testing includes TR-3 integration, Block 4 weapons integration, incremental software releases with new capability and bug fixes, integrated system evaluations, multi-ship operations, and mission effectiveness evaluations. ***FY 2023 Base Plans:*** Continue to support Integrated Test capacity and flight test execution (manpower, weapons, flight hours, range time, and chase, target & tanker support assets) to develop and verify and test capabilities as directed by the F-35 JPO. Major program testing includes Block 4 weapons integration, incremental software releases with new capability and bug fixes, integrated system evaluations, multi-ship operations, and mission effectiveness evaluations. Continued funding for Development Test Aircraft Modification broken out from the rest of the Development activities. This is continued support from FY22 for Developmental Test (DT) aircraft modifications in order to be test-ready and operationally-representative. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase due to ramp up development activities and addition of funding line for Development Test Aircraft Modification from Operational Test category.					
Title: Operational Test (OT)	0.000	10.550	9.881	0.000	9.881
Articles:	-	-	-	-	-
Description: Government test site Integrated Test activities to support development of Air Vehicle C2D2 and TR-3 programs, as well as inherent maintenance systems, training systems, and combat data systems test support. Testing includes ground, logistics, and flight-testing of incremental flight software releases, weapon integration, DMS/fleet sustainment, hardware refresh and regression efforts to ensure total system integration meets program requirements in an operationally representative environment. Test site capabilities to meet program requirements include infrastructure, ranges, engineering, administration, logistics; maintenance,					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
controls, information technologies, classified facilitates, and service unique supporting capabilities. The sites to be funded include but are not limited to Nellis AFB and Yuma Air Station. ***FY 2022 Plans:*** Funding will support Integrated Test capacity and flight test execution (manpower, weapons, flight hours, range time, and chase, target & tanker support assets) to develop and verify and regression test capabilities as directed by the F-35 JPO. Major program testing includes TR-3 integration, Block 4 weapons integration, incremental software releases with new capability and deficiency report fixes, integrated system evaluations, multi-ship operations and mission effectiveness evaluations in an operationally representative environment. ***FY 2023 Base Plans:*** Funding will support Integrated Test capacity and flight test execution (manpower, weapons, flight hours, range time, and chase, target & tanker support assets) to develop and verify and test capabilities as directed by the F-35 JPO. Major program testing includes TR-3 integration, Block 4 weapons integration, incremental software releases with new capability and deficiency report fixes, integrated system evaluations, multi-ship operations and mission effectiveness evaluations in an operationally representative environment. Continued funding for Operational Test (OT) aircraft modifications in order to be test-ready and operationally-representative. Funding also includes the execution of the remaining 64 OT virtual mission trials and IOT&E close out tasks. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease due to reducing overall flight test execution at Nellis AFB and Edwards AFB.					
Title: Future Flight Test Capabilities/Investments	0.000	50.121	51.711	0.000	51.711
Articles:	-	-	-	-	-
Description: Test fleet modifications, test mission equipment/assets, instrumentation capability, and data center investments are required to continue to support Block 4 capability development and integrated test requirements. TR-3 related capability requires current test aircraft and replacement test aircraft configurations to be modified to new hardware, software, and instrumentation systems. Program priorities, flight test demand, data quantity/ bandwidth upgrades, and capability delivery schedules require a steady update to test fleet configurations. Modifications and instrumentation design/procurement/install are long-lead efforts requiring stable funding and contract vehicles to meet program needs. ***FY 2022 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue incremental funding of Lot 14 Undefinitized Contract Award for FTI design, procurement and installation (CF-84 & BF-154). Continues FTI design/ fabrication/installation (long-lead NRE, parts procurement, kit fabrication) for replacement test aircraft (16x unique designs). Continues NRE/procurement/installation to retrofit or maintain test aircraft viability. Additionally, development, procurement, and installation of flight test data center system upgrades to support Integrated Testing across multiple F-35 stakeholder sites. FTI development, procurement, fabrication, and installation for current/future service loaner aircraft in order to continue Integrated Testing with Service Operational Test organizations. Further, continue integration and procurement efforts for required Block 4 test mission assets, includes but not limited to weapons test vehicles, unique test mission equipment, and other test execution support equipment. ***FY 2023 Base Plans:*** Continue incremental funding of Lot 14 Contract for FTI design, procurement and installation. Continues FTI design/ fabrication/installation (long-lead NRE, parts procurement, kit fabrication) for replacement test aircraft (16x unique designs). Continues NRE/procurement/installation to retrofit or maintain test aircraft viability. Additionally, development, procurement, and installation of flight test data center system upgrades to support Integrated Testing across multiple F-35 stakeholder sites. FTI development, procurement, fabrication, and installation for current/future service loaner aircraft in order to continue Integrated Testing with Service Operational Test organizations. Further, continue integration and procurement efforts for required Block 4 test mission assets, includes but not limited to weapons test vehicles, unique test mission equipment, and other test execution support equipment. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease in funding due to ramp up of activities across the board, to include Lot 17 Flight Science, Flight Science Lite, Operational Test TR-3 Flight Test Investments, etc.					
Title: Ground Test and Simulation Infrastructure (GTSI) ***Articles:*** ***Description:*** Ground Test & Simulation Infrastructure capabilities from Block 4 early-on design and development through Installed Systems Verification activities prior to Developmental Flight Test for all variants of the F-35 aircraft. Infrastructure efforts include Laboratory Developments of Improvements & Modernization (I&M) assets used for design, development and test of Block 4 capabilities, and development of Ground Test & Evaluation Capabilities for digital and non-digital installed systems verification. Laboratory Developments will focus on the pure development of Block 4 capabilities through a Capability Verification Infrastructure that meets required	0.000 -	7.330 -	6.568 -	0.000 -	6.568 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
fidelities that would advance the high quality development of the Air System capabilities. Ground Test & Simulation Infrastructure will also include capabilities for cyber testing for TR-3 assessments within three main areas: air vehicle, information systems, and supply chain. ***FY 2022 Plans:*** Continue Ground Test & Simulation Infrastructure improvements and modernization capabilities needed for Block 4 air system developments. Test infrastructure improvements include vendor lab needed capabilities to develop scheduled Block 4 software drop aircraft deliverables, and tech refresh efforts for aging equipment and OS migration to meet ATO needs. Develop F-35 mission threads for continued digital verification automated capabilities for early-on software development, and continue aircraft cyber improvements and testing efforts. ***FY 2023 Base Plans:*** Continue Ground Test & Simulation Infrastructure improvements and modernization capabilities needed for Block 4 air system developments to include but are not limited to Advanced Anti-Air Threat Simulation (AATS), Automatic Test & Re-Test (ATRT), Big Data Platform (BDP), Friendly and Threat Signal Development and Delivery, Multi-Spectral Environment improvements, etc. Efforts required to enable efficiencies in the Capability Verification process and decrease reliance on Flight Test Operations as the overwhelmingly sole means of Verification. Test Infrastructure improvements include Vendor lab capabilities as well as USG Organic Infrastructure. Develop F-35 mission threads for continued digital verification automated capabilities for early-on software development, and continue aircraft cyber improvements and testing efforts. Major Investments include improvements to Digital Capabilities and Analysis and Ground Integrated Battlespace Verification. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease due to some GT&S Developments being fielded for the Ground Test Infrastructure and maturing and stabilization of other Developments.					
Accomplishments/Planned Programs Subtotals	0.000	130.954	134.077	0.000	134.077

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

D. Acquisition Strategy

The new Test & Evaluation Project Unit will maximize use of existing F-35 contracts, where possible, for the various T&E-related capabilities and investments outlined in Sections A-C above. For example, provisions for new instrumentation on new flight test aircraft are being implemented when applicable via existing Production contracts in order to allow installation of the required hardware while those airframes are still on the assembly line. This will save significant costs and effort that would be required if instrumentation installation occurred after aircraft delivery. Other modifications and/or non-recurring engineering (NRE) may be implemented via existing contracts being managed by the Air Vehicle Program Management Office as part of the Block 4 engineering and development efforts. In addition, a separate Cost-Plus-Incentive-Fee-type contract is planned to provide a long-term approach to upgrading and maintaining laboratories and also for maintaining the older existing SDD test aircraft. Viability modifications to the SDD test aircraft are being contracted via a combination of Streamlined Delivery Orders for NRE and hardware as well as a Cost Plus-type contract, using both to expedite the right modifications as needed at the right time in order to avoid test aircraft grounding and to maximize their availability. In addition, separate Basic Ordering Agreements or Indefinite Quantity/Indefinite Delivery contracts may be used to implement a long-term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future capabilities. Several new cost reduction initiatives are being studied to determine possible migration away from Lockheed-Martin support to less-expensive organic support (via either government solutions, local test-base support contracts, or a combination of both) in areas such as test aircraft maintenance, test operations support, and networks/knowledge management. Other initiatives are being pursued to move more test data collection requirements from the open-air ranges to ground test chambers, computer-based models and simulations, or other laboratory venues where possible.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2555 / *Test and Evaluation (T&E)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DFC - Prime LM Developmental Foundation Contract	C/CPIF	Lockheed Martion : Ft. Worth, TX	0.000	0.000		45.129	Nov 2021	43.959	Nov 2022	-		43.959	184.640	273.728	273.728
OT - Prime LM Operational Test Aircraft Modification	C/CPIF	Lockheed Martion : Ft. Worth, TX	0.000	0.000		1.270	Jun 2022	1.800	Aug 2023	-		1.800	8.941	12.011	12.011
FI - Prime LM DT AC Viability	C/CPIF	Lockheed Martion : Ft. Worth, TX	0.000	0.000		12.292	Dec 2021	12.938	Dec 2022	-		12.938	17.414	42.644	42.644
FI - Flight Test Asset	C/CPFF	Lockheed Martion : Ft. Worth, TX	0.000	0.000		28.036	Dec 2021	28.465	Dec 2022	-		28.465	22.741	79.242	79.242
DT- Prime LM Development Test Aircraft Modification	C/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		1.000	Mar 2022	4.275	Aug 2023	-		4.275	9.941	15.216	15.216
		Subtotal	0.000	0.000		87.727		91.437		-		91.437	243.677	422.841	N/A

Remarks

R-3 Acronyms correspond to R-2A categories, per below breakout:
DFC - Development Foundation Contract (DFC) Flight Test
OT - Operational Test
DT- Development Test Aircraft Modification
Breaking out DT-Development Test Aircraft Modification to track separate from Operation Test Aircraft Modification
DT - Developmental Test
FI - Future Flight Test Capabilities and Investments
GTS - Ground Test Simulation and Infrastructure

Flight Test assets include DT and OT weapons procurement to support Test and assets needed for flight test instrumentation

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DT - Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		8.630	Dec 2021	9.057	Dec 2022	-		9.057	16.390	34.077	34.077
DT - Developmental Test & Evaluation	WR	NAWCAD : China Lake, CA	0.000	0.000		0.410	Dec 2021	0.431	Dec 2022	-		0.431	1.639	2.480	2.480

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2555 / *Test and Evaluation (T&E)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DT - Developmental Test & Evaluation	MIPR	Edwards AFB : Edwards AFB, CA	0.000	0.000		7.784	Dec 2021	8.195	Dec 2022	-		8.195	23.355	39.334	39.334
OT - Operational Test & Evaluation - UOTT	MIPR	Nellis AFB : Nellis AFB, NV	0.000	0.000		5.189	Dec 2021	5.331	Dec 2022	-		5.331	27.184	37.704	37.704
FI - Operational Test & Evaluation	MIPR	59 Tes : Nellis AFB, NV	0.000	0.000		9.793	Dec 2021	10.307	Dec 2022	-		10.307	24.292	44.392	44.392
OT - IOT&E Completion	MIPR	Edwards AFB : Edwards AFB, CA	0.000	0.000		4.091	Dec 2021	2.750	Nov 2022	-		2.750	Continuing	Continuing	Continuing
GTS - Ground Test & Evaluation (T&E) Capabilities	Various	Various : Various	0.000	0.000		6.033	Apr 2022	5.204	Jun 2023	-		5.204	8.238	19.475	19.475
GTS - Cyber Test & Evaluation	Various	Various : Various	0.000	0.000		1.297	Dec 2021	1.365	Dec 2022	-		1.365	5.519	8.181	8.181
		Subtotal	0.000	0.000		43.227		42.640		-		42.640	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		130.954		134.077		-		134.077	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

F-35 Block 4 Integrated T&E Schedule

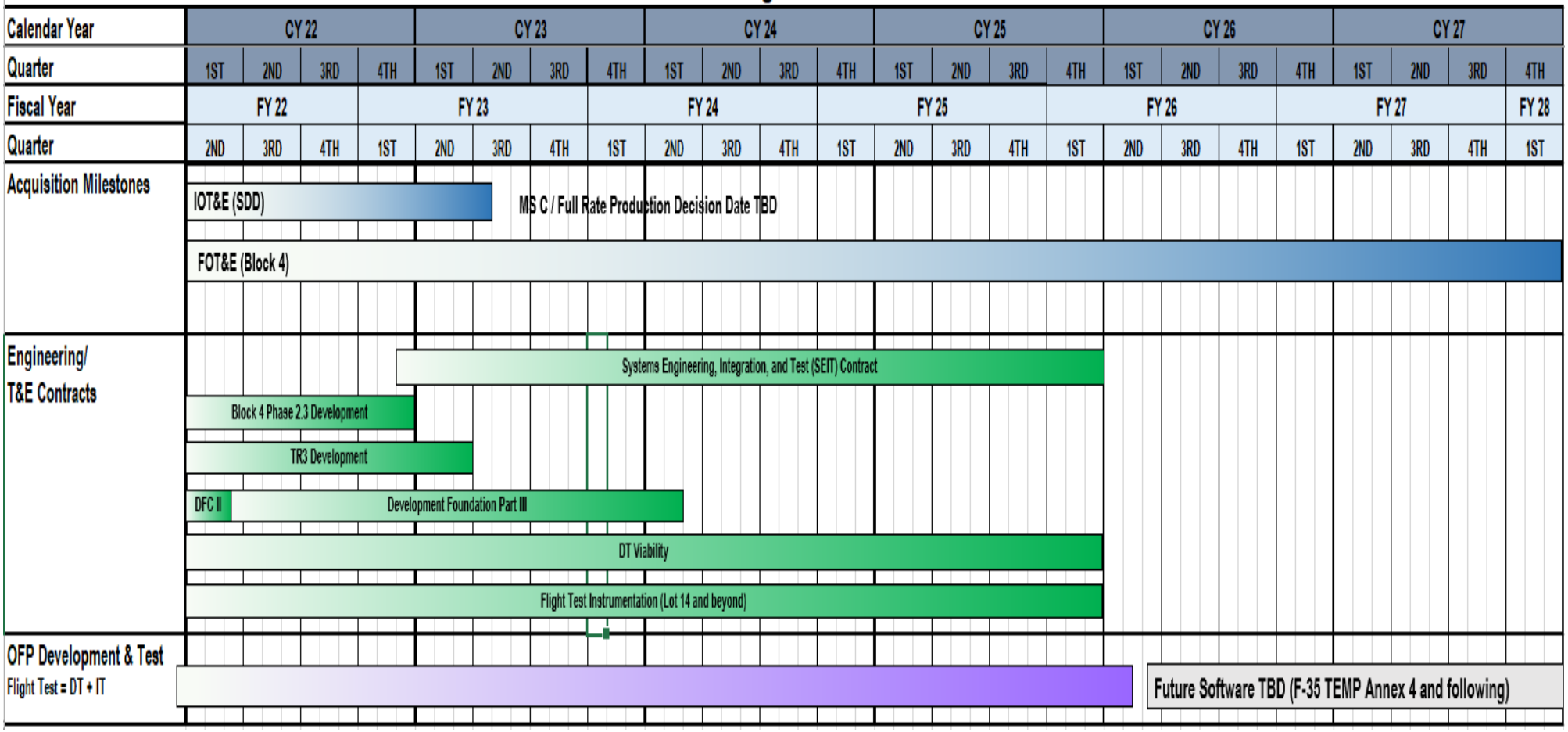

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2555				
Development Foundaction Contract Part II	1	2022	1	2022
Development Foundaction Contract Part III	1	2022	1	2024
DT Aircraft Viability	1	2022	4	2027
Flight Test Instrumentation	1	2022	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2556 / *Propulsion (PP)*	

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
2556: *Propulsion (PP)*	0.000	0.000	16.493	7.415	-	7.415	0.407	0.399	0.393	0.379	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Propulsion (PP) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

Propulsion F135 projects within the Continuous Capability Development & Delivery (C2D2) are provided for developmental efforts for propulsion systems and test engine requirements such as Block 4 Integrated Flight Test Support, Engine Flight Test Mechanics, Flight Test Engineering, Engine Hardware, Test Engine Procurements, research, component and capability development, prototypes, various studies, and other associated government costs integral to support the developmental stages for engine modernization and improvement to support the F135 Air Vehicle. Testing and development of the three F135 aircraft variants require engine propulsion funding to enable continued flight hours. Flight hours are budgeted and planned to meet the Block 4 flight test timelines, and required Flight Test support. Flight Test Support efforts will transition to Organic support by FY2026. Transition of Flight Test Support requirements to organic capability includes efforts performed by contractor and government installations, Autonomic Logistics Information System / Operational Data Integrated Network (ALIS/ODIN) transition, and Final Flight Release (FFR) engine support efforts. Propulsion C2D2 provides funding for requirements to support the Air Vehicle modernization efforts with signature predicting improvements and a bridge program for engine modernization. Engine Modernization is predicted to begin in FY2024.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Propulsion (PP)	0.000	16.493	7.415	0.000	7.415
Articles:	-	-	-	-	-
Description: Propulsion F135 Block 4 Integrated Flight Test Support includes efforts such as Engine Flight Test Mechanics, Flight Test Engineers, Replacement Engine Hardware, Test Engine Procurements, and other associated government costs. For C2D2 to be able to continue to test all three aircraft variants, engine propulsion support is required to enable continued flying. Flights and flight hours are planned over the next two years to meet the steady amount of Block 4 flight test timelines, requiring consistent propulsion support. The yearly cost is reduced in FY2023 compared to recent years due to the majority of the hardware being purchased in the first 3 years of the contract. The Flight Test Support effort needs to transition to Organic support after the 2023 fiscal year. This includes some continued P&W support for training, ALIS/ODIN transition, and completing the FFR engine support efforts. There are additional requirements to support the Air Vehicle modernization					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2556 / *Propulsion (PP)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total

efforts in signature predicting improvements and a bridge program for a growth engine. A growth engine is predicted to begin in FY2024, so a bridge program in FY2023 is essential to enable continued work on previous efforts and an efficient, smooth transition into the EMD phase.

FY 2022 Plans:

Continued Propulsion F135 Block 4 Integrated Flight Test Support to include efforts such as Engine Flight Test Mechanics, Flight Test Engineers, Replacement Engine Hardware, Test Engine Procurements, and other associated government costs. The Flight Test Fleet is planning to maintain elevated aircraft inventory at twelve aircraft in FY2022 (from 11 in FY2020). This again includes seven at Edwards Air Force Base and five at Patuxent River Naval Air Base. Flights and Engine Flight Hours (EFH) are expected to maintain their FY2021 levels at 960 flights and 1920 flight hours. As the FFR engines have aged past their design life, it is necessary to purchase three ISR engines (two STOVL and one CTOL) to enable continued propulsion support of flight test. Continued incremental funding for two ISR engines, which has been funded with FY2020 and FY2021 dollars. An additional spare engine will be purchased in FY2022.

FY 2023 Base Plans:

Continued Propulsion F135 Block 4 Integrated Flight Test Support to include Engine Flight Test Mechanics, Flight Test Engineering, Engine Hardware, Test Engine Procurements, research, component and capability development, prototypes, various studies, and other associated government costs integral to support the developmental stages for engine modernization and improvement to support the F135 Air Vehicle. The Flight Test Fleet will maintain elevated aircraft inventory at twelve aircraft in FY2023. This includes seven at Edwards Air Force Base and five at Patuxent River Naval Air Base. Flights and Engine Flight Hours (EFH) are expected to maintain their FY2021 and FY2022 levels at 240 flights and 480 flight hours per quarter. Flight Test Support efforts will transition to Organic support by FY2026. Transition of Flight Test Support requirements to organic capability includes efforts performed by contractor and government installations, Autonomic Logistics Information System / Operational Data Integrated Network (ALIS/ODIN) transition, and Final Flight Release (FFR) engine support efforts. FY2023 Propulsion C2D2 provides funding for requirements to support the Air Vehicle modernization efforts, Engine signature predicting improvement efforts, and continuing F135 Engine Modernization developmental efforts.

FY 2023 OCO Plans:

N/A

FY 2022 to FY 2023 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2556 / *Propulsion (PP)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Decrease from FY2022 to FY2023 is due to a reduction of hardware procurements required to support flights and flight hours required in FY2023 to meet Block 4 test events.					
Accomplishments/Planned Programs Subtotals	0.000	16.493	7.415	0.000	7.415

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The C2D2 acquisition strategy is to employ both Cost and Fixed Price Incentive contracts for the Block 4 engineering and development efforts. A new modernization contract structure will be established for all post SDD Block 4 efforts. In addition, a separate Basic Ordering Agreement or Indefinite Quantity/Indefinite Delivery contract is planned to provide a long term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future C2D2 capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2556 / *Propulsion (PP)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PP Prime PW C2D2 Propulsion DT Aircraft Procurement Engines	C/FPIF	Pratt & Whitney : East Hartford, Connecticut	0.000	0.000		5.870	Nov 2021	0.500	Nov 2022	-		0.500	0.000	6.370	6.370
PP Prime PW C2D2 Propulsion Flight Test	C/CPIF	Pratt & Whitney : East Hartford, Connecticut	0.000	0.000		8.267	Oct 2021	5.884	Oct 2022	-		5.884	13.188	27.339	27.339
PP DevSecOps Emulation Lab	C/CPIF	Pratt & Whitney : East Hartford, Connecticut	0.000	0.000		1.229	Oct 2021	0.000		-		0.000	2.458	3.687	3.687
PP F135 Engine Modernization Development	Various	Various : Various : East Hartford, Connecticut	0.000	0.000		1.024	Oct 2021	0.736	Oct 2022	-		0.736	11.268	13.028	13.028
		Subtotal	0.000	0.000		16.390		7.120		-		7.120	26.914	50.424	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PP Program Management Support	Various	Various : Various	0.000	0.000		0.103	Nov 2021	0.295	Nov 2022	-		0.295	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.103		0.295		-		0.295	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		16.493		7.415		-		7.415	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2556 / *Propulsion (PP)*

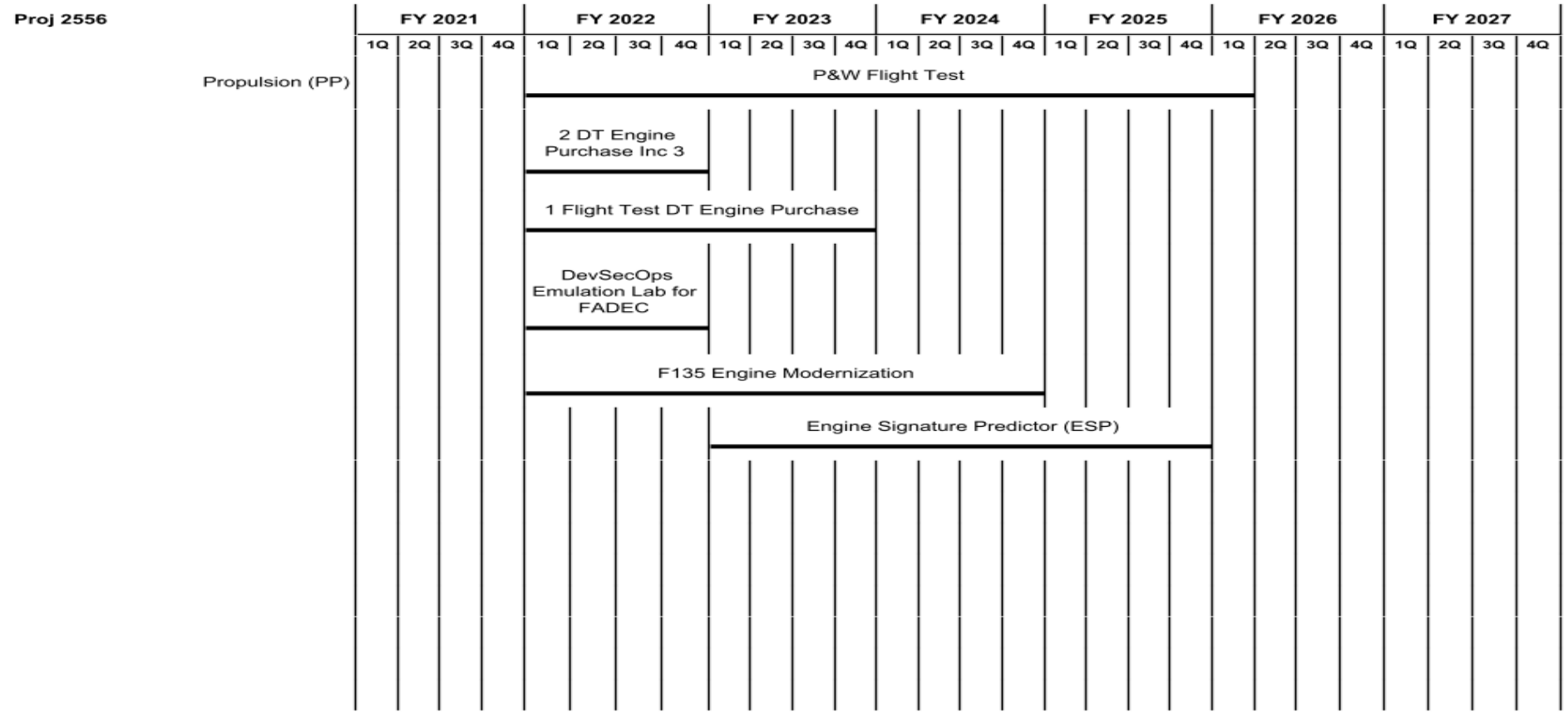

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2556 / *Propulsion (PP)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2556				
Propulsion (PP): P&W Flight Test	1	2022	1	2026
Propulsion (PP): 2 DT Engine Purchase Inc 3	1	2022	4	2022
Propulsion (PP): 1 Flight Test DT Engine Purchase	1	2022	4	2023
Propulsion (PP): DevSecOps Emulation Lab for FADEC	1	2022	4	2022
Propulsion (PP): F135 Engine Modernization	1	2022	4	2024
Propulsion (PP): Engine Signature Predictor (ESP)	1	2023	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*				Project (Number/Name) 2557 / *Maintenance Systems (MxS)*			
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**
2557: *Maintenance Systems (MxS)*	0.000	0.000	25.456	25.090	-	25.090	21.343	17.238	14.143	14.364	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Maintenance Systems (MxS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

Autonomic Logistics Information System (ALIS) is the current F-35 program solution for delivering core maintenance and logistics information solutions to F-35 warfighters. ALIS will continue to deliver the core logistics and maintenance infrastructure requirements for the F-35 enterprise as ALIS evolves into Operational Data Integrated Network (ODIN). ALIS includes features such as aircraft scheduling, training delivery, record keeping, technical data delivery, supply chain management, maintenance management, pilot and maintenance debriefing, and mission planning. Current ALIS development efforts are focused on low cost and high return investments that provide a high confidence return on investment in the short term, significant warfighter impact, and/or offer synergy with ODIN development efforts.

ODIN will incrementally provide a modern, user-friendly integrated information system for the F-35 to deliver core maintenance and logistics information solutions. ODIN will be comprised of multiple elements to include modern hardware, architectures, software development methods, data environments, and platforms. Leveraging agile and modern software development practices, ODIN will serve as the primary logistics tool to support F-35 warfighter operations, health and diagnostics, mission planning, supply chain management, maintenance, and training. ODIN will substantially decrease F-35 administrator and maintainer workload, increase readiness rates for all F-35 variants, and allow software engineers to rapidly develop and deploy updates in response to changing warfighter requirements and improve data management, quality, and integrity. The ALIS to ODIN transition is intended to enable holistic fleet management, improve performance, enhance readiness, and reduce costs to the F-35 program. ODIN is comprised of both hardware and software which support the flow of Unclassified and Classified aircraft and maintenance-related data.

Prognostics and Health Management (PHM) encompasses the Air-System set of software, technical data and capabilities to enable optimal maintenance, and resolution of aircraft failures and impending failures. On-aircraft software identifies failures, enables reporting of status to the pilot, and records data for life cycle management and sustaining engineering. The data processed by ALIS/ODIN supports maintenance debriefs, life cycle management via Assess Material Condition (AMC), and failure resolution via Health Reporting Codes (HRCs) and Anomaly and Failure Resolution System (AFRS). Maintenance performance (inclusive of reliability and maintainability) is enhanced via the collection and reporting of the Failure Reporting and Corrective Action System (FRACAS). Applied advanced analytics on the aggregate PHM is used for airframe lifting and enterprise use, and improves responsiveness to operational needs.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Operational Data Integrated Network (ODIN)	0.000	23.817	24.590	0.000	24.590
Articles:	-	-	-	-	-
Description: ODIN will incrementally provide a modern, user-friendly integrated information system for the F-35 to deliver core maintenance and logistics information solutions. ODIN will be comprised of multiple elements to include modern hardware, architectures, software development methods, data environments, and platforms. Leveraging agile and modern software development practices, ODIN will serve as the primary logistics tool to support F-35 warfighter operations, health and diagnostics, mission planning, supply chain management, maintenance, and training. ODIN will substantially decrease F-35 administrator and maintainer workload, increase readiness rates for all F-35 variants, and allow software engineers to rapidly develop and deploy updates in response to changing warfighter requirements and improve data management, quality, and integrity. The ALIS to ODIN transition is intended to enable holistic fleet management, improve performance, enhance readiness, and reduce costs to the F-35 program. ODIN is comprised of both hardware and software which support the flow of Unclassified and Classified aircraft and maintenance-related data.					
FY 2022 Plans: Continue to modernize and reduce sustainment costs of the F-35 logistics information system by delivering incremental capabilities to transition aircraft, data, and operations from ALIS to ODIN. Continue maturing the ODIN infrastructure (hardware/cloud based development and production infrastructure). ODIN efforts will focus on building a modern architecture and the data platform/environment(s), conducting cybersecurity and user-focused testing, and developing user training. Program will execute initiatives that support enabling the ODIN requirements by modernizing ALIS applications where applicable; leveraging commercial and government off the shelf; and maximizing re-use from existing US Services logistics modernization efforts.					
FY 2023 Base Plans: Continue to modernize and reduce sustainment costs of the F-35 logistics information system by delivering incremental capabilities to transition aircraft, data, and operations from ALIS to ODIN. Initiate next-gen ODIN hardware refresh analysis and trade studies to support targeted five year hardware replacement. Implement the ODIN cloud-based infrastructure, migrate ALIS development into the government managed cloud environment, and begin transition to the new ODIN Enterprise Architecture. Continue modernization of the ODIN data architecture and implementation of the government managed ODIN data processing, analytics and archive environment. Efforts will continue in cybersecurity survivability and development of user-focused training.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Execute efforts continuing to modernize current applications where applicable, leveraging commercial and government off the shelf and maximizing re-use from existing US Services logistics modernization efforts. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY2022 to FY2023 is due to inflation.					
Title: Prognostics and Health Management (PHM) ***Articles:***	0.000 -	1.639 -	0.500 -	0.000 -	0.500 -
Description: Prognostics and Health Management (PHM) encompasses the Air-System set of software, technical data and capabilities to enable optimal maintenance, and resolution of aircraft failures and impending failures. On-aircraft software identifies failures, enables reporting of status to the pilot, and records data for life cycle management and sustaining engineering. The data processed by ALIS/ODIN supports maintenance debriefs, life cycle management via Assess Material Condition (AMC), and failure resolution via Health Reporting Codes (HRCs) and Anomaly and Failure Resolution System (AFRS). Maintenance performance (inclusive of reliability and maintainability) is enhanced via the collection and reporting of the Failure Reporting and Corrective Action System (FRACAS). Applied advanced analytics on the aggregate PHM is used for airframe lifting and enterprise use, and improves responsiveness to operational needs. ***FY 2022 Plans:*** Develop PHM failure resolution improvements by analyzing Anomaly and Failure Resolution System (AFRS) technical data, as identified by the associated affordability war room initiatives and Performance-to-Plan metrics, and increasing Assess Material Condition algorithm development and implementation. Develop government-hosted PHM data storage and analytics infrastructure. Begin Systems Engineering and architecture development of PHM Downlink capability. ***FY 2023 Base Plans:*** Continue development of PHM failure resolution improvements by analyzing Anomaly and Failure Resolution System (AFRS) technical data, as identified by the associated affordability war room initiatives and Performance-to-Plan metrics, and Assess Material Condition algorithm development and implementation. Continue development of government-hosted PHM data storage and analytics infrastructure. Continue Systems Engineering and architecture development of PHM Downlink capability. ***FY 2023 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is due to program development and implementation of 12 of the 15 priority AMC algorithms on non-Annualized FY22-23 SAHW Mod 89 contract vehicle in FY2022. Remaining 3 algorithms will begin development in 2022 and be completed in FY2023.					
Accomplishments/Planned Programs Subtotals	0.000	25.456	25.090	0.000	25.090

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2557 / *Maintenance Systems (MxS)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MxS Prime LM ODIN	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		11.749	Nov 2021	12.281	Nov 2022	-		12.281	0.000	24.030	24.030
MxS Prime PW ODIN	C/CPFF	Pratt Whitney : East Hartford, Connecticut	0.000	0.000		2.418	Nov 2021	2.466	Nov 2022	-		2.466	0.000	4.884	4.884
MxS Prime LM PHM	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		1.639	Nov 2021	0.500	Nov 2022	-		0.500	0.000	2.139	2.139
		Subtotal	0.000	0.000		15.806		15.247		-		15.247	0.000	31.053	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MxS ODIN Development Support	Various	Various : Various	0.000	0.000		9.650	Nov 2021	9.843	Nov 2022	-		9.843	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		9.650		9.843		-		9.843	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		25.456		25.090		-		25.090	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

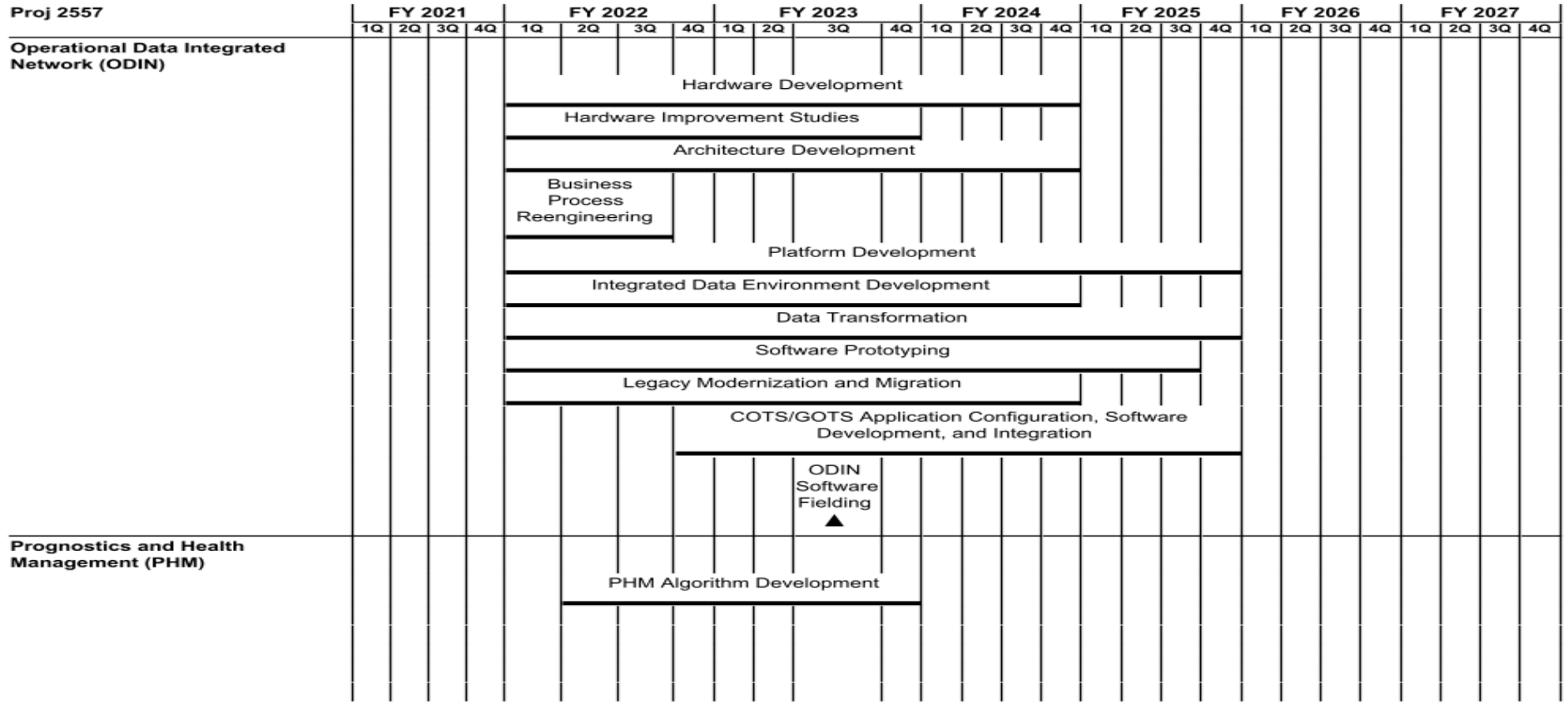

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2557				
Operational Data Integrated Network (ODIN): Hardware Development	1	2022	4	2024
Operational Data Integrated Network (ODIN): Hardware Improvement Studies	1	2022	4	2023
Operational Data Integrated Network (ODIN): Architecture Development	1	2022	4	2024
Operational Data Integrated Network (ODIN): Business Process Reengineering	1	2022	3	2022
Operational Data Integrated Network (ODIN): Platform Development	1	2022	4	2025
Operational Data Integrated Network (ODIN): Integrated Data Environment Development	1	2022	4	2024
Operational Data Integrated Network (ODIN): Data Transformation	1	2022	4	2025
Operational Data Integrated Network (ODIN): Software Prototyping	1	2022	3	2025
Operational Data Integrated Network (ODIN): Legacy Modernization and Migration	1	2022	4	2024
Operational Data Integrated Network (ODIN): COTS/GOTS Application Configuration, Software Development, and Integration	4	2022	4	2025
Operational Data Integrated Network (ODIN): ODIN Software Fielding	3	2023	3	2023
Prognostics and Health Management (PHM): PHM Algorithm Development	2	2022	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2558 / *Combat Data Systems (CDS)*	

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
2558: *Combat Data Systems (CDS)*	0.000	0.000	29.925	26.334	-	26.334	19.688	14.990	9.049	9.174	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Combat Data Systems (CDS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

Investment and modernization activities required for Block 4 development, integration, test and evaluation of Mission Data Tools, Verification & Validation Systems, and Mission Planning Software/Hardware. Funding related to key deliveries to Electronic Warfare Squadrons and F-35 Operational Squadrons and enables government and contractor labor for mission planning support environment and joint reprogramming enterprise. Other costs support Technology Investment for key Modernization / Innovation activities and Cloud based DevSecOps infrastructure.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Joint Reprogramming Environment (JRE)	0.000	21.210	19.706	0.000	19.706
Articles:	-	-	-	-	-
Description: Investment and modernization activities required for Block 4 development, integration, test and evaluation of Mission Data Tools, Verification & Validation Systems, and Mission Planning Software/Hardware. Funding related to key deliveries to Electronic Warfare Squadrons and F-35 Operational Squadrons and enables government and contractor labor for mission planning support environment and joint reprogramming enterprise. Other costs support Technology Investment for key Modernization/Innovation activities and Cloud based DevSecOps infrastructure.					
FY 2022 Plans: Continue efforts for the AGILE development of Common Reprogramming Tools (CRT) to provide Electronic Warfare Squadrons with essential software tools that reduce Mission Data File (MDF) development time and human error and increase combat effectiveness. The CRT effort will continue in decomposition of requirements and begin software coding to support development of the software tool. Continue effort to upgrade Reprogramming Verification & Validation Systems (RVVS) to meet the Block 4 capability requirements and meet					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
next generation threats. RVVS plans to conduct critical System Engineering Technical Review events to move forward in the design and delivery including acquiring equipment. Continue activities on the Capability Upgrade/ Refresh Contract (CURC) to accomplish three main objectives including upgrading the Radar Stimulator Interface (RSI), provide Win10 compliance, and redesign the IT infrastructure. In addition, the refresh effort upgrades multiple United States Reprogramming Laboratory (USRL) computer systems for security compliance, and removes obsolete parts and deficient technology to form the new backbone of the USRL IT infrastructure for all future mission data production, test, and fielding. Continue ongoing efforts to support aircraft in relation to Technology Refresh-3 (TR-3), Continuous Development Capability Delivery (C2D2), Capability Upgrade and Refresh, and Network Boundary Consolidation. Continue development support for defining, managing and acquiring the F-35 Reprogramming capability enhancements identified in approved requirements documents for Block 4 and modernization efforts and support efforts for joint reprogramming enterprise activities. ***FY 2023 Base Plans:*** Continue efforts for the AGILE development of Common Reprogramming Tools (CRT) to provide Electronic Warfare Squadrons with essential software tools that reduce Mission Data File (MDF) development time and human error and increase combat effectiveness. The CRT effort will continue software coding and testing to support development / deployment of the software tool. Continue ongoing design and delivery efforts to upgrade Reprogramming Verification & Validation Systems (RVVS) to meet the Block 4 capability requirements and meet next generation threats. Continue ongoing efforts to support aircraft in relation to Technology Refresh-3 (TR-3), Continuous Development Capability Delivery (C2D2), and Network Boundary Consolidation. Continue development support for defining, managing and acquiring the F-35 Reprogramming capability enhancements identified in approved requirements documents for Block 4 and modernization efforts and support efforts for joint reprogramming enterprise activities, including CRT and Software In The Loop (SITL). Begin efforts on the Systems, Engineering, Integration & Test (SEIT) contract to integrate Block 4 software data loads at reprogramming laboratories. Begin efforts to perform laboratory integration to complete of the F-35 Reprogramming Laboratory (FRL). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is due to completion of efforts associated with the Capability Upgrade/ Refresh Contract (CURC), including updating reprogramming laboratories to lot 13 configuration and support of the 30P06 mission data file builds.					
Title: Mission Planning Support Environment (MPSE)	0.000	8.715	6.628	0.000	6.628

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Articles:	-	-	-	-	-
Description: Investment and modernization activities required for Block 4 development, integration, test and evaluation of Mission Data Tools, Verification & Validation Systems, and Mission Planning Software/Hardware. Funding related to key deliveries to Electronic Warfare Squadrons and F-35 Operational Squadrons and enables government and contractor labor for mission planning support environment and joint reprogramming enterprise. Other costs support Technology Investment for key Modernization/Innovation activities and Cloud based DevSecOps infrastructure.					
FY 2022 Plans: Continue development support for defining, managing and acquiring the F-35 Mission Planning capability enhancements identified in approved requirements documents for Block 4 and modernization efforts within the mission planning support hardware and software boundary. Continue development support of the Mission Planning System Environment (MPSE) software suite that is customized for each and every air vehicle Operational Flight Program (OFP) / Software Data Load (SDL) release to support the features and enhancements of that release. Continue development of the F-35 Next Generation Mission Planning (formerly OSCAR) to: a) Replace the Joint Mission Planning Software (JMPS) framework that is facing end-of-life, increasing cost, decreasing performance, and limited capability growth, and b) Replace the Ground Data Receptacle (GDR) cross-domain solution and encryption/decryption device that has been has been assessed by the NSA to have high cyber security risks and not able to meet NSA Raise-the-Bar requirements without a complete re-design. Continue ongoing efforts to transition F-35 mission planning software development to AGILE and DevSecOps methodologies to reduce costs and increase speed of delivering capabilities to the warfighter. Continue ongoing efforts to transition F-35 mission planning software development workload from contractor to the Government, securing organic software development capability and reducing costs.					
FY 2023 Base Plans: Continue development support for defining, managing and acquiring the F-35 Mission Planning capability enhancements identified in approved requirements documents for Block 4 and modernization efforts within the mission planning support hardware and software boundary. Continue development support of the Mission Planning System Environment (MPSE) software suite that is customized for each and every air vehicle Operational Flight Program (OFP) / Software Data Load (SDL) release to support the features and enhancements of that release. Continue development of the F-35 Next Generation Mission Planning in order to a) replace the Joint Mission Planning Software (JMPS) framework that is facing end-of-life, increasing cost, decreasing performance, and limited capability growth, and b) Replace the Ground Data Receptacle (GDR) cross-domain solution and encryption/decryption device that has been has been assessed by the NSA to have					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
high cyber security risks and not able to meet NSA Raise-the-Bar requirements without a complete re-design. Continue ongoing efforts to transition F-35 mission planning software development to AGILE and DevSecOps methodologies to reduce costs and increase speed of delivering capabilities to the warfighter. Continue ongoing efforts to transition F-35 mission planning software development workload from contractor to the Government, securing organic software development capability and reducing costs. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is due to completion of efforts associated with Government Systems Engineering and Testing, specifically the Partner Analysis Laboratory Operations, Lab Based Security Assessment, and Baseline Performance Measurement.					
Accomplishments/Planned Programs Subtotals	0.000	29.925	26.334	0.000	26.334

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDS Prime JRE Development - CRT Increment 1	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		3.450	Oct 2021	6.390	Dec 2022	-		6.390	64.083	73.923	73.923
CDS Prime JRE Development - RVVS	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		2.850	Jul 2022	7.141	Dec 2022	-		7.141	102.150	112.141	108.141
CDS Prime JRE Development - CURC	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		7.875	Oct 2021	0.000		-		0.000	38.555	46.430	46.430
CDS Prime JRE Development - TR-3	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		1.493	Oct 2021	0.371	Mar 2023	-		0.371	5.973	7.837	7.837
CDS Prime JRE Development - SEIT	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.000		1.444	Jul 2023	-		1.444	48.300	49.744	49.744
CDS Prime JRE Development - FRL	Various	Various : Various	0.000	0.000		0.000		0.469	Jan 2023	-		0.469	0.000	0.469	4.469
CDS Prime JRE Development - Capability Development	Various	Various : Various	0.000	0.000		1.050	Dec 2021	3.420	Dec 2022	-		3.420	0.000	4.470	4.470
CDS Prime MPSE Development F-35 Next Gen Mission Planning	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		6.375	Jul 2022	1.961	Mar 2023	-		1.961	17.600	25.936	25.936
CDS Prime MPSE Development - Capability Development	Various	Various : Various	0.000	0.000		0.000		2.954	Dec 2022	-		2.954	0.000	2.954	2.954
		Subtotal	0.000	0.000		23.093		24.150		-		24.150	276.661	323.904	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDS JRE Development Support	Various	Various : Various	0.000	0.000		4.492	Dec 2021	0.471	Dec 2022	-		0.471	Continuing	Continuing	Continuing
CDS MPSE Development Support	Various	Various : Various	0.000	0.000		2.340	Dec 2021	1.713	Dec 2022	-		1.713	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		6.832		2.184		-		2.184	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2558 / *Combat Data Systems (CDS)*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		29.925		26.334		-		26.334	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

F-35 Combat Development Roadmap - JRE

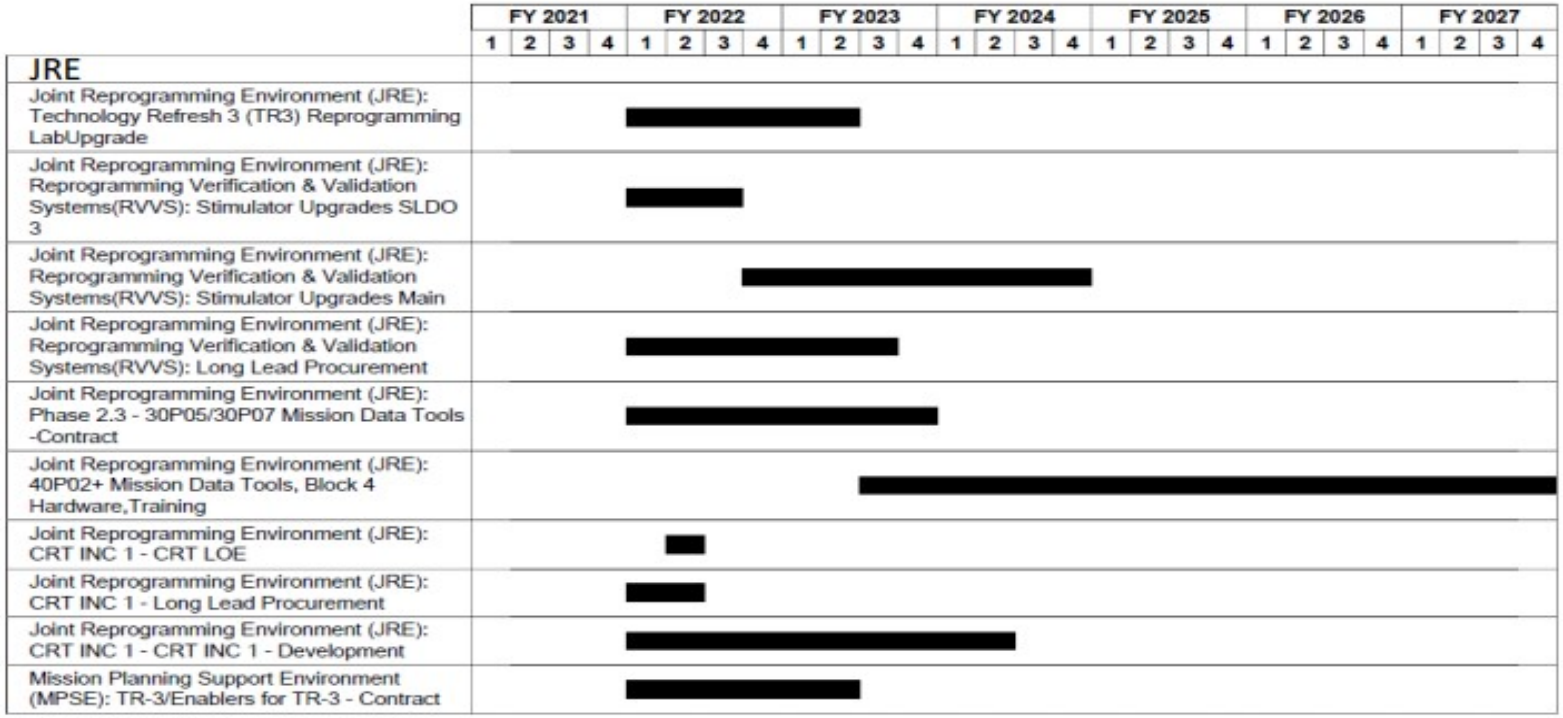

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

F-35 Combat Development Roadmap - MPSE

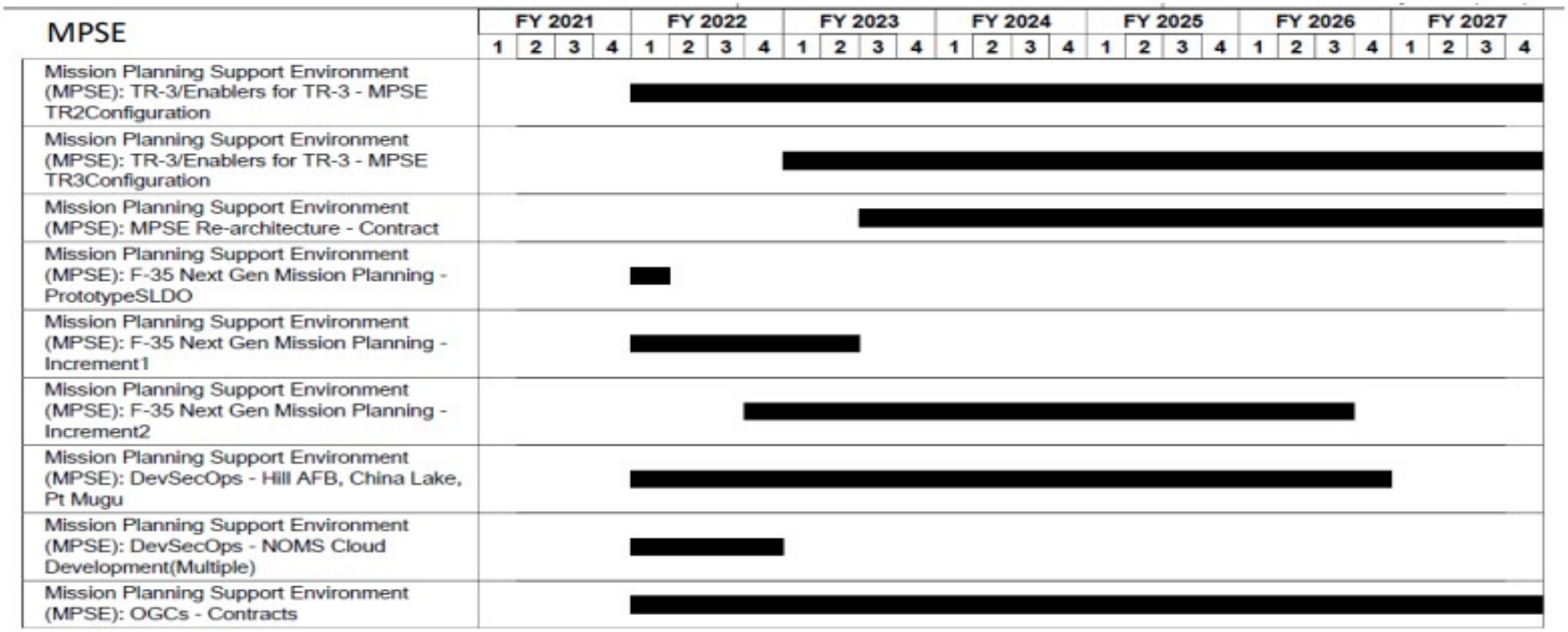

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2558				
Joint Reprogramming Environment (JRE): Technology Refresh 3 (TR3) Reprogramming Lab Upgrade	1	2022	2	2023
Joint Reprogramming Environment (JRE): Reprogramming Verification & Validation Systems (RVVS): Stimulator Upgrades SLDO 3	1	2022	3	2022
Joint Reprogramming Environment (JRE): Reprogramming Verification & Validation Systems (RVVS): Stimulator Upgrades Main	4	2022	4	2024
Joint Reprogramming Environment (JRE): Reprogramming Verification & Validation Systems (RVVS): Long Lead Procurement	1	2022	3	2023
Joint Reprogramming Environment (JRE): Phase 2.3 - 30P05/30P07 Mission Data Tools - Contract	1	2022	4	2023
Joint Reprogramming Environment (JRE): 40P02+ Mission Data Tools, Block 4 Hardware, Training	3	2023	4	2027
Joint Reprogramming Environment (JRE): CRT INC 1 - CRT LOE	2	2022	2	2022
Joint Reprogramming Environment (JRE): CRT INC 1 - Long Lead Procurement	1	2022	2	2022
Joint Reprogramming Environment (JRE): CRT INC 1 - CRT INC 1 - Development	1	2022	2	2024
Mission Planning Support Environment (MPSE): TR-3/Enablers for TR-3 - Contract	1	2022	2	2023
Mission Planning Support Environment (MPSE): TR-3/Enablers for TR-3 - MPSE TR2 Configuration	1	2022	4	2027
Mission Planning Support Environment (MPSE): TR-3/Enablers for TR-3 - MPSE TR3 Configuration	1	2023	4	2027
Mission Planning Support Environment (MPSE): MPSE Re-architecture - Contract	3	2023	4	2027
Mission Planning Support Environment (MPSE): F-35 Next Gen Mission Planning - Prototype SLDO	1	2022	1	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Mission Planning Support Environment (MPSE): F-35 Next Gen Mission Planning - Increment 1	1	2022	2	2023
Mission Planning Support Environment (MPSE): F-35 Next Gen Mission Planning - Increment 2	4	2022	3	2026
Mission Planning Support Environment (MPSE): DevSecOps - Hill AFB, China Lake, Pt Mugu	1	2022	4	2026
Mission Planning Support Environment (MPSE): DevSecOps - NOMS Cloud Development (Multiple)	1	2022	4	2022
Mission Planning Support Environment (MPSE): OGCs - Contracts	1	2022	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2559 / *Training Systems and Simulation (TSS)*	

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
2559: *Training Systems and Simulation (TSS)*	0.000	0.000	36.242	36.995	-	36.995	30.642	24.747	20.516	20.842	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Training Systems and Simulation (TSS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

The F-35 Training Systems & Simulation Program Management Office (TSS PMO) development portfolio is aligned with the program's Continuous Capability Development & Delivery (C2D2) efforts and is organized in three primary lines of effort; Training System Capability Development (TSCD), Training Systems Investments (TSI) Roadmap, and Joint Simulation Environment (JSE) Development. As a function of the F-35 organizational pivot, this is the first budget cycle in which TSS PMO budget requirements have been comprehensively and discretely defined within a dedicated Project Unit.

Training System Capability Development (TSCD): Efforts will continue with a primary focus on alignment of Training System capabilities with other elements of the Air System. Specific efforts will include development of Block 4 capabilities to equivalent maturity of those in the Air Vehicle enabling release of one capability upgrade per year to the fleet, continued development of the Production Runtime Server (PRTS) - Pilot Training Device TR-3 equivalent - to enable Block 4 capabilities, continued development of Live-Virtual-Constructive (LVC) capabilities including Distributed Mission Training (DMT), and appropriate lab infrastructure to enable Training System development.

Training Systems Investments (TSI) Roadmap: Efforts will continue with a focus on implementation of the modernization activities outlined in the TSS PMO roadmaps that will target the requirement for higher fidelity training to the warfighter. Specific efforts will include software architecture modernization, hardware architecture modernization and Synthetic Threat Enhancement.

Joint Simulation Environment (JSE) Development: Efforts will continue with a focus on remaining F-35 In-a-Box (FIAB) software integration, complex threat/sensor model integration to establish operationally representative simulation environment required for operational test trial validity, and the completion of Verification, Validation and Accreditation (VV&A) activities enabling successful IOT&E Run-for-Score events. Efforts will include FIAB development, threat/sensor model fidelity upgrades, new threat/sensor model development, and JSE upgrades to enable effective verification of Block 4 capabilities. Efforts will continue toward expansion of JSE capability to Wright Patterson AFB, Edwards AFB and Nellis AFB.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2559 / *Training Systems and Simulation (TSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Training Systems Capability Development (TSCD)	0.000	17.849	20.155	0.000	20.155
Articles:	-	-	-	-	-
Description: Efforts will continue with a primary focus on alignment of Training System capabilities with other elements of the Air System. Specific efforts will include development of capabilities (CI1-3) to equivalent maturity of those in the Air Vehicle enabling release of one capability upgrade per year to the fleet, continued development of the Production Runtime Server (PRTS) - Pilot Training Device TR-3 equivalent - to enable CI1-3 capabilities, continued development of Live-Virtual-Constructive (LVC) capabilities including Distributed Mission Training (DMT), and appropriate lab infrastructure to enable Training System development. ***FY 2022 Plans:*** Efforts will continue to support development, integration and test of Block 4 capabilities in the Training System with a focus on equivalent capability maturity between the Training System and other elements of the Air System and preparing a relevant capability upgrade (Pilot Training, Maintainer Training, Instructional Products) for release to the fleet in FY2022. Additionally, PRTS will continue critical development, integration and test activities required to enable Block 4 training capabilities. The DMT program will continue with development activities to ensure DMT capability remains fully integrated with CI1-3 capabilities and in-line with overall Air System capability to include certified and exportable Cross Domain Solutions (CDS) to enable fully integrated DMT across the F-35 Enterprise. Within the LVC portfolio, requirements derivation and planning activities for Enhanced Embedded Training and TCTS II integration will continue to evolve. Training System lab infrastructure assets will be configured to enable current and future Training System development activities across the portfolio. ***FY 2023 Base Plans:*** Efforts will continue to support development, integration and test of Capability Increment (CI) 1-3 capabilities in the Training System with a focus on equivalent capability maturity between the Training System and other elements of the Air System and preparing relevant capability upgrades (Pilot Training, Maintainer Training, Instructional Products) for release to the fleet in FY2023. Additionally, PRTS will continue critical development, integration and test activities required to enable TR-3 training capabilities. The DMT program will continue with development activities to ensure DMT capability remains fully integrated with CI1-3 capabilities and in-line with overall Air System capability to include certified and exportable Cross Domain Solutions (CDS) to enable fully integrated DMT across the F-35 Enterprise. Within the LVC portfolio, requirements derivation and planning activities for Enhanced Embedded Training and TCTS II integration will continue to evolve. Training System lab infrastructure assets will be configured to enable current and future Training System development activities					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
across the portfolio. Effects Based Simulation (EBS) will continue design, development and integration activities to support requirements analysis and pilot training tasks. EBS was formerly carried as an effort in the Joint Simulation Environment (JSE) R-2A category, but will align to the Training System Capability Development (TSCD) R-2A category beginning in FY2023. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY2022 to FY2023 is due to increasing complexity in Operational Flight Program (OFP) capability development. Additionally, PRTS development execution is ramping up to enable TR-3 for the Training System.					
Title: Training Systems Investments (TSI) Roadmap	0.000	7.834	6.935	0.000	6.935
Articles:	-	-	-	-	-
Description: Efforts will continue with a focus on implementation of the modernization activities outlined in the TSS PMO roadmaps that will target the requirement for higher fidelity training to the warfighter. Specific efforts will include software architecture modernization, hardware architecture modernization and Synthetic Threat Enhancement. ***FY 2022 Plans:*** Efforts will continue to refine and implement TSS PMO investment roadmaps with the objective to enable operationally relevant and higher fidelity training to the warfighter with focus on training to support the high-end fight. Software architecture modernization efforts (FLITE) will continue with an intent to integrate FLITE into the PTD software baseline in FY2022 (objective) or FY2023 (threshold). Hardware architecture modernization efforts will continue with an intent to conduct tradeoff analyses of smaller footprint Pilot Training Device (PTD) rapid prototype activities to support eventual Program of Record production cut-in. Synthetic Threat Enhancement efforts will continue to improve the quantity, density and fidelity of relevant synthetic threat integration in the family of PTDs with intent to incrementally integrate synthetic threat improvement in each annual PTD capability upgrade to the fleet. Opportunities to leverage JSE synthetic threat investment toward a common threat environment across Training Systems and JSE architectures will continue to mature with an intent to minimize duplicative investment in multiple synthetic threat environments across the F-35 Enterprise. ***FY 2023 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Efforts will continue to refine and implement TSS PMO investment roadmaps with the objective to enable operationally relevant and higher fidelity training to the warfighter with focus on training to support the high-end fight. Software architecture modernization efforts (FLITE) will complete with an intent to integrate FLITE into the PTD software baseline in FY2023 (threshold). Hardware architecture modernization efforts will continue with an intent to finalize smaller footprint Pilot Training Device (PTD) rapid prototype activities to support eventual Program of Record production cut-in in 2023. Synthetic Threat Enhancement efforts will continue to improve the quantity, density and fidelity of relevant synthetic threat integration in the family of PTDs with intent to incrementally integrate synthetic threat improvement in each annual PTD capability upgrade to the fleet. Activities to leverage JSE synthetic threat investment toward a common threat environment across Training Systems and JSE architectures will increase with an intent to minimize duplicative investment in multiple synthetic threat environments across the F-35 Enterprise. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is due to some Training Systems Investments (TSI) initiatives ramping down in late FY2023 and TSS beginning to realize the added capability and cost benefits of those investments.					
Title: Joint Simulation Environment (JSE) Development	0.000	10.559	9.905	0.000	9.905
Articles:	-	-	-	-	-
Description: Efforts will continue with a focus on remaining F-35 In-a-Box (FIAB) software integration, complex threat/sensor model integration to establish operationally representative simulation environment required for operational test trial validity, and the completion of Verification, Validation and Accreditation (VV&A) activities enabling successful IOT&E Run-for-Score events. Efforts will include FIAB development, threat/sensor model fidelity upgrades, new threat/sensor model development, and Joint Simulation Environment (JSE) upgrades to enable effective verification of Block 4 capabilities. Efforts will continue toward expansion of JSE capability to Wright Patterson AFB, Edwards AFB and Nellis AFB. ***FY 2022 Plans:*** Efforts will continue with a focus on completion of Verification, Validation and Accreditation (VV&A) activities enabling successful IOT&E Run-for-Score events. Concurrently, upgrading JSE capability will enable effective verification of Block 4 capabilities (sensor model fidelity, complex threat models and F-35 In-a-Box (FIAB) upgrades) (objective). Efforts will continue toward expansion of JSE capability to Wright Patterson AFB, Edwards					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
AFB and Nellis AFB in FY 2023 (objective). Effects Based Simulation (EBS) will continue design, development and integration activities to support requirements analysis and pilot training tasks. Efforts will continue to support F-35 participation in events at the Virtual Warfare Center (VWC), including Nimble Lightning. ***FY 2023 Base Plans:*** Efforts will continue with a focus on the completion of sim deficiency corrections identified through VV&A and completion of IOT&E Run-for-Score test trials. Efforts will include FIAB software development and integration, threat/sensor model fidelity upgrades, new threat/sensor model development, and JSE upgrades to enable effective verification of Block 4 capabilities. Planning efforts will continue toward expansion of JSE capability to Wright Patterson AFB, Edwards AFB, and Nellis AFB. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is primarily due to the realignment of Effects Based Simulation (EBS) Development from Joint Simulation Environment (JSE) to appropriately capture support mission rehearsal and tactics and requirements development under Training Systems Capability Development (TSCD). The decrease is offset by annual cost inflation of recurring activities as well as parallel efforts with IOT&E completion and the ramp up of development and integration efforts for increased Block 4 capabilities and model fidelity. Block 4 FIAB will leverage development from a common software baseline, reducing duplication of work in software development. In concert with the maturation of the TSS PMO, higher fidelity cost estimating models have evolved to comprehensively inform FY2023 (and beyond) budget requirements for JSE development.					
Accomplishments/Planned Programs Subtotals	0.000	36.242	36.995	0.000	36.995

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

For FY2022 and FY2023, the majority of Training System capability development requirements (CI1-3 development, PRTS development, Lab Infrastructure) will be executed via training specific CLINs in Enterprise-level development contracts (Block 4 - Phase 2.3, Development Foundation). Training System Investment requirements will be executed via a combination of training specific CLINs in Enterprise-level contracts, TSS PMO specific contract actions and Other Transaction

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
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Authority (OTA) contracts. JSE development requirements will be executed via a combination of Enterprise-level contract actions and MIPR transactions to support OGC activities.

In concert with continued maturation of the F-35 organizational pivot, the TSS PMO acquisition strategy will transition toward TSS PMO controlled contract actions that will enable more effective oversight of PMO cost-schedule-performance execution.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS Prime LM Training System Alignment (TSCD)	C/CPAF	Lockheed Martin : FT. Worth, TX	0.000	0.000		7.143	Nov 2021	7.750	Nov 2022	-		7.750	65.360	80.253	80.253
TSS Prime LM PTD TR-3 Development (TSCD)	C/CPAF	Lockheed Martin : FT. Worth, TX	0.000	0.000		5.706	Nov 2021	6.225	Nov 2022	-		6.225	33.680	45.611	45.611
TSS Prime LM Training Lab Infrastructure (TSCD)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		4.376	Nov 2021	4.755	Nov 2022	-		4.755	28.764	37.895	37.895
TSS Live-Virtual-Constructive (LVC) - DMT (TSCD)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.624	Nov 2021	0.625	Nov 2022	-		0.625	16.587	17.836	17.836
TSS Effects Based Simulation Development (TSCD)	Various	Various : Various	0.000	0.000		0.000		0.800	Nov 2022	-		0.800	7.114	7.914	7.914
TSS Hardware Re-architecture (TSI)	Various	Lockheed Martin : FT. Worth, TX	0.000	0.000		3.619	Nov 2021	3.215	Nov 2022	-		3.215	3.675	10.509	10.509
TSS Software Re-architecture (TSI)	C/CPAF	Lockheed Martin : FT. Worth, TX	0.000	0.000		2.968	Nov 2021	2.610	Nov 2022	-		2.610	17.888	23.466	23.466
TSS Synthetic Threat Enhancement (TSI)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		1.247	Nov 2021	1.110	Nov 2022	-		1.110	6.107	8.464	8.464
TSS JSE Prime LM FIAB Development	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		4.538	Nov 2021	4.857	Nov 2022	-		4.857	18.775	28.170	28.170
TSS JSE VWC Development	Various	Various : Various	0.000	0.000		0.496	Dec 2021	0.000		-		0.000	3.325	3.821	3.821
		Subtotal	0.000	0.000		30.717		31.947		-		31.947	201.275	263.939	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS JSE Pax Development Support	Various	NAWCAD : Patuxent River, MD	0.000	0.000		4.349	Nov 2021	4.108	Nov 2022	-		4.108	17.993	26.450	26.450
TSS JSE Other Development Support	Various	Various : Various	0.000	0.000		0.409	Nov 2021	0.940	Nov 2022	-		0.940	1.692	3.041	3.041

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2559 / *Training Systems and Simulation (TSS)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS JSE EBS Development Support	Various	Various : Various	0.000	0.000		0.767	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		5.525		5.048		-		5.048	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		36.242		36.995		-		36.995	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2559 / *Training Systems and Simulation (TSS)*

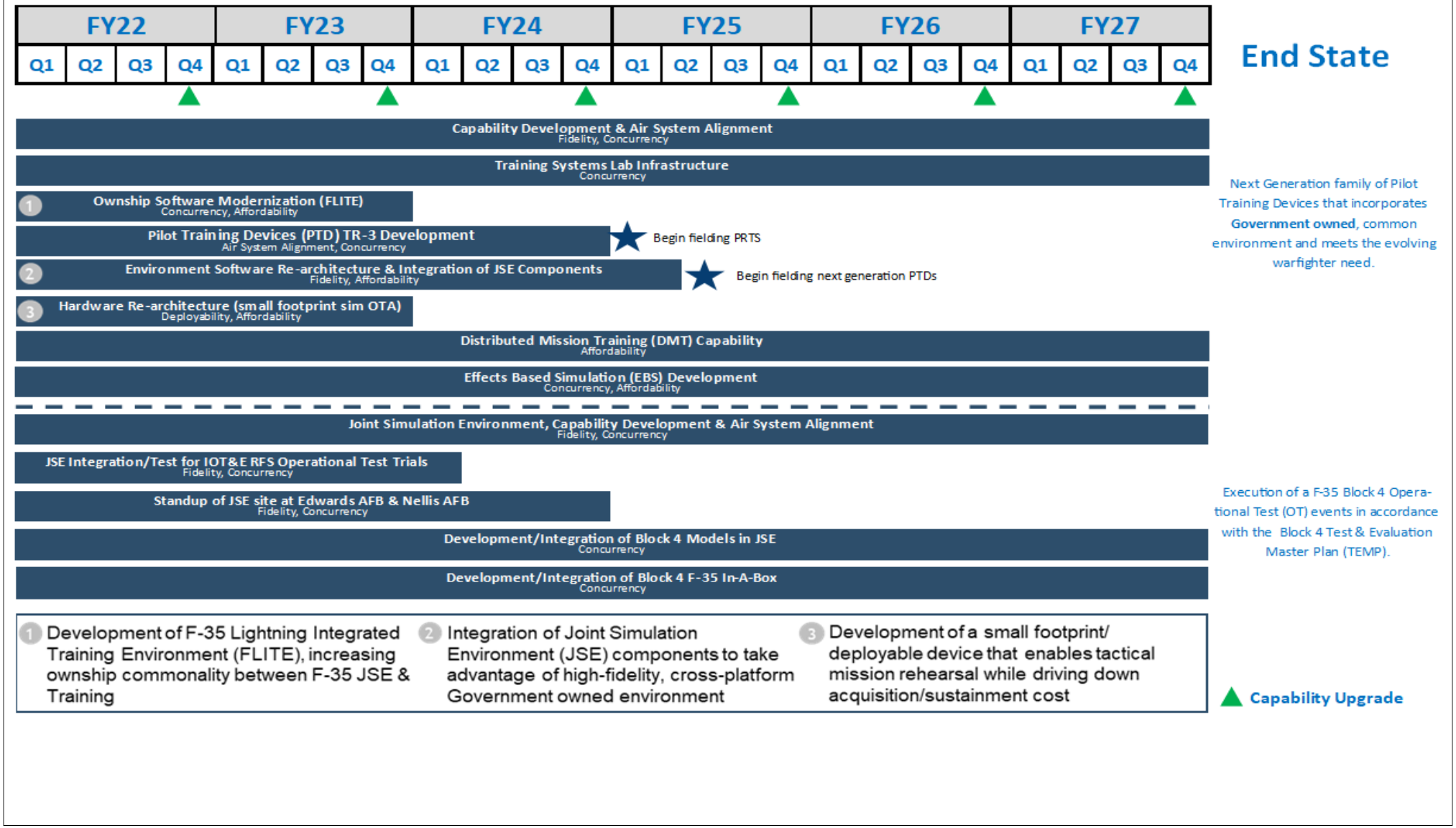


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2559 / *Training Systems and Simulation (TSS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2559				
Training Systems and Simulation (TSS): Capability Development & Air System Alignment	1	2022	4	2027
Training Systems and Simulation (TSS): Training System Lab Infrastructure	1	2022	4	2027
Training Systems and Simulation (TSS): Ownship Software Modernization (FLITE)	1	2022	4	2023
Training Systems and Simulation (TSS): Pilot Training Devices (PTD) TR-3 Development	1	2022	4	2024
Training Systems and Simulation (TSS): Environment Software Re-architecture & Integration of JSE Components	1	2022	3	2025
Training Systems and Simulation (TSS): Hardware Re-architecture (Small Footprint Sim OTA)	1	2022	4	2023
Training Systems and Simulation (TSS): Distributed Mission Training (DMT)	1	2022	4	2027
Training Systems and Simulation (TSS): Development of Effects Based Simulation (EBS)	1	2022	4	2027
Training Systems and Simulation (TSS): Joint Simulation Environment, Capability Development & Air System Alignment	1	2022	4	2027
Training Systems and Simulation (TSS): JSE Integration/Test for IOT&E RFS Operational Test Trials	1	2022	1	2024
Training Systems and Simulation (TSS): Standup of JSE Site at Edwards AFB & Nellis AFB	1	2022	4	2024
Training Systems and Simulation (TSS): Development/Integration of Block 4 Models in JSE	1	2022	4	2027
Training Systems and Simulation (TSS): Development/Integration of F-35 In-a-Box	1	2022	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*				Project (Number/Name) 2560 / *Infrastructure and Support Costs*			
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**
2560: *Infrastructure and Support Costs*	0.000	0.000	2.492	2.616	-	2.616	2.672	2.721	2.768	2.815	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, Infrastructure and Support Costs was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

The F-35 Joint Program Office equips U.S. and allied forces with operational F-35 weapon systems in support of military and national security operations. The acquisition and product support workforce provides cutting edge weapon systems, sustainment capabilities, and is charged with providing management, tools, and technical and business capabilities needed to oversee acquisition programs throughout their life cycle. The acquisition workforce funded in this program element will support development phases of acquisition programs to include material solution analysis, technology development, engineering and manufacturing development. This funding does not include costs for base operating support civilian personnel. This program element supports both civilian pay and non-pay support requirements. Additional infrastructure and program management support costs include travel, supplies, contractor support, off-base leases, program office IT, cybersecurity, model-based systems engineering, and risk reduction studies directly related to Block 4 and TR3 developmental efforts.

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. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Core Program Support/CSS Support	0.000	2.492	2.616	0.000	2.616
Articles:	-	-	-	-	-
Description: Includes off-base leases, Advisory and Assistance Services (A&AS), travel, supplies, Navy Working Capital fund subject matter expert support, program office IT, cybersecurity, model-based systems engineering, and risk reduction studies directly related to Block 4 and TR3 developmental efforts.					
FY 2022 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2560 / *Infrastructure and Support Costs*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Support program office efforts, including Arlington, VA program unique off-base lease costs, CSS support, travel, supplies, Navy working capital technical SME labor, program office IT, cybersecurity, model-based systems engineering, and risk reduction studies. ***FY 2023 Base Plans:*** Continue to support program office efforts, including Arlington, VA program unique off-base lease costs, CSS support, travel, supplies, Navy working capital technical SME labor, program office IT, cybersecurity, model-based systems engineering, and risk reduction studies directly related to Block 4 and TR3 developmental efforts. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY2022 to FY2023 is due to price adjustments and/or inflation.					
Accomplishments/Planned Programs Subtotals	0.000	2.492	2.616	0.000	2.616

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2560 / *Infrastructure and Support Costs*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Core Program Support Cyber Risk Reduction	Various	Various : Various	0.000	0.000		0.500	Dec 2021	0.500	Dec 2022	-		0.500	Continuing	Continuing	Continuing
Core Program Support Model-Based Systems Engineering	Various	Various : Various	0.000	0.000		0.100	Dec 2021	0.100	Dec 2022	-		0.100	Continuing	Continuing	Continuing
Core Program Support Air Worthiness Support and Cyber Safe Support	MIPR	DTIC/TBD : DTIC/ TBD	0.000	0.000		0.000		0.674	Dec 2022	-		0.674	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.600		1.274		-		1.274	Continuing	Continuing	N/A

Remarks

Core Program Support Air Worthiness Support and Cyber Safe Support is not a new start. Broken out to provide additional transparency into the JPO's Infrastructure & Support Cost requirements. Funds were under CSS Support/Civ Support in previous years.

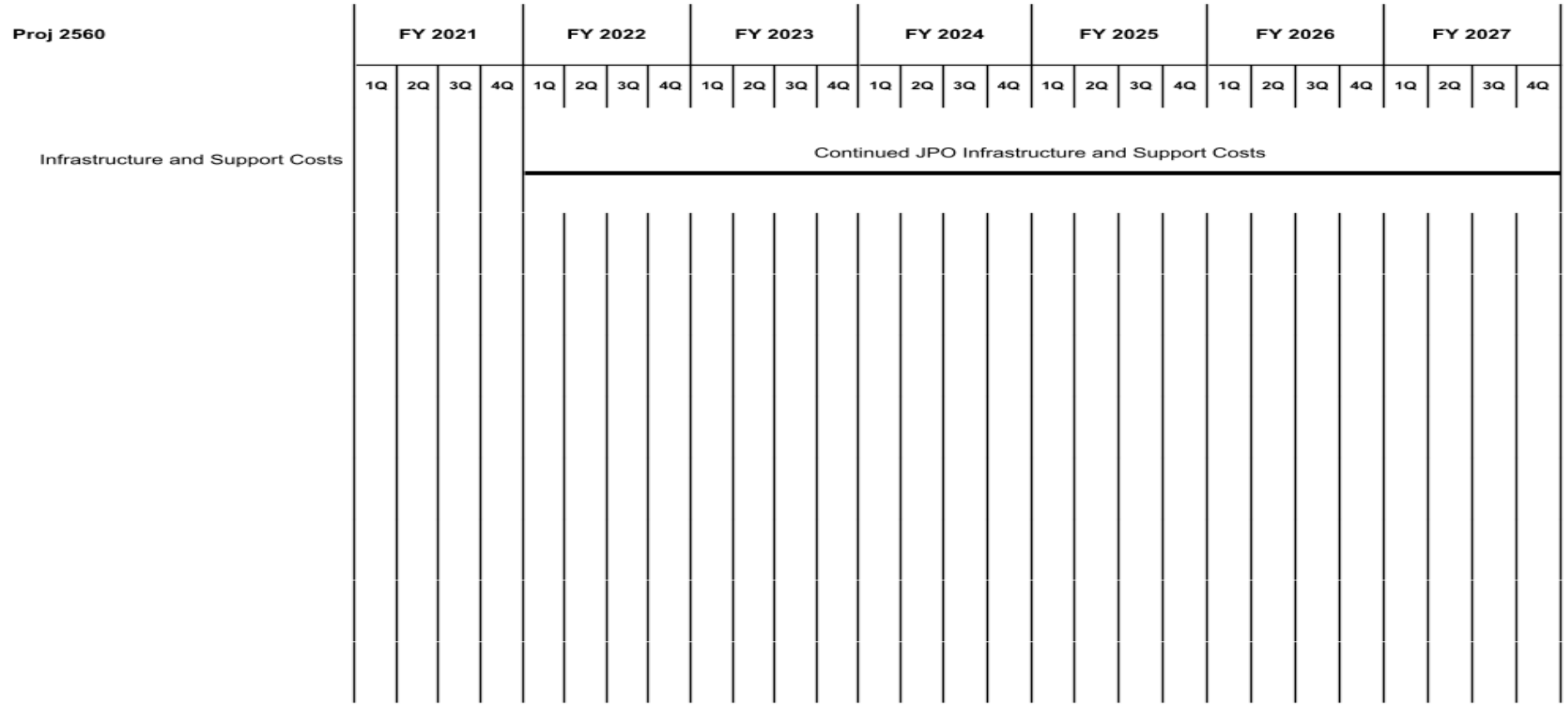
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSS Support/Civ Support	Various	Various : Various	0.000	0.000		1.550	Dec 2021	1.000	Dec 2022	-		1.000	Continuing	Continuing	Continuing
Core Program Support Off-Base Leases	MIPR	WHS : NCR	0.000	0.000		0.092	Oct 2021	0.092	Oct 2022	-		0.092	Continuing	Continuing	Continuing
Core Program Support Travel	Various	Various : Various	0.000	0.000		0.250	Oct 2021	0.250	Oct 2022	-		0.250	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.892		1.342		-		1.342	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		2.492		2.616		-		2.616	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2560 / *Infrastructure and Support Costs*



2023DON - 0604840N - 2560

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2560 / *Infrastructure and Support Costs*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2560				
Infrastructure and Support Costs: Continued JPO Infrastructure and Support Costs	1	2022	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2561 / *DevSecOps*	

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
2561: *DevSecOps*	0.000	0.000	13.956	10.032	-	10.032	17.003	16.980	16.966	17.267	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, DevSecOps was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

The F-35 Software Development, Security & Operations (DevSecOps) Cloud platform environment allows for US Government and contracted software development teams to produce, test and deploy capabilities for F-35 supported Project Management Offices (PMO). This includes providing support to the Combat Data Systems (CDS), Air Vehicle (AV), Maintenance Systems (MxS), Propulsion (PP), and Training Systems and Simulation (TSS) PMOs. The mission of DevSecOps is to provide a centralized and consolidated F-35 software development environment, allowing for rapid release cycles to keep the F-35 ahead of its adversaries. Investment and modernization of DevSecOps include efforts to support F-35 Software Modernization efforts, develop organic government software and testing capabilities, enhance the security posture of the development pipeline, and support goals of reducing long-term on-premise infrastructure environments cost ultimately resulting in reducing fleet delivery timelines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: DevSecOps Support	0.000	13.956	10.032	0.000	10.032
Articles:	-	-	-	-	-
Description: The F-35 Software Development, Security & Operations (DevSecOps) Cloud platform environment allows for US Government and contracted software development teams to produce, test and deploy capabilities for F-35 supported Project Management Offices (PMO). This includes providing support to the Combat Data Systems (CDS), Air Vehicle (AV), Maintenance Systems (MxS), Propulsion (PP), and Training Systems and Simulation (TSS) PMOs. The mission of DevSecOps is to provide a centralized and consolidated F-35 software development environment, allowing for rapid release cycles to keep the F-35 ahead of its adversaries. Investment and modernization of DevSecOps include efforts to support F-35 Software Modernization efforts, develop organic government software and testing capabilities, enhance the security posture of the development pipeline, and support goals of reducing long-term on-premise infrastructure environments cost ultimately resulting in reducing fleet delivery timelines.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: Continue development and support for DevSecOps infrastructure, platform, software development pipeline, and joint F-35 organizational connections. Establish initial capabilities and expand existing software development efforts with the goal of transitioning dispersed and separated software development environments into model based systems engineering and a fully collaborative requirements to development environment. Additional goals of delivering flight-worthy rapid prototyping of capability, virtual test capability, and transitioning workloads to lower cost software sustainment efforts. New requirements from PMOs are expected. Prepare environment for on-boarding, as well as transitioning the PMOs from separate pillars to a centralized JPO-managed cloud environment. Includes software licensing for PMO tool sets and associated applications. Major cost drivers include requirements tool, and collaboration tools, authentication tools - supporting Single Sign On and Multi-Factor Authentication and Compiler tools. For software tooling efforts, working towards an eventual consolidation of tools across the PMOs (i.e. application rationalization) with an end goal of a standardized compiler tool sets and Cybersecurity compliance. Accordingly, talent/consumption (hardware and software to run the environment) contracts must be renewed and expanded. Cybersecurity requirements must also be met, meaning additional resources for security processes, monitoring, scanning, vulnerability identification plus mitigation, and meeting all requirements for DoD compliance to obtain ongoing/continuous Authority to Operate (ATO).					
FY 2023 Base Plans: Continue development and support for DevSecOps infrastructure, platform, software development pipeline, and joint F-35 organizational connections. Continue to develop a transition plan to stand-up a team consisting of Industry and Government software development in support of software modernization and DevSecOps Cloud transition. Establish initial capabilities and expand existing software development efforts with the goal of transitioning dispersed and separated software development environments into model based systems engineering and a fully collaborative requirements to development environment. Capabilities include software development environment for Maintenance Systems ODIN, ALIS to ODIN migration, Combat Data System's Mission Planning, Propulsion's Offboard Management System, and Air Vehicle Mission System domains. Additional goals of delivering flight-worthy rapid prototyping of capability, virtual test capability, and transitioning workloads to lower cost software sustainment efforts. New requirements from PMOs are expected. Prepare environment for on-boarding, as well as transitioning the PMOs from separate pillars to a centralized JPO-managed cloud environment. Includes software licensing for PMO tool sets and associated applications. Major cost drivers include requirements tool, and collaboration tools, authentication tools - supporting Single Sign On, Multi-Factor Authentication and development tools. For software tooling efforts, working towards an eventual consolidation of tools across the PMOs (i.e. application rationalization) with an end goal of a standardized compiler tool sets and Cybersecurity compliance. Accordingly, talent/consumption (hardware and software					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
to run the environment) contracts must be renewed and expanded. Cybersecurity requirements must also be met, meaning additional resources for security processes, monitoring, scanning, vulnerability identification plus mitigation, and meeting all requirements for DoD compliance to obtain ongoing/continuous Authority to Operate (ATO) and continuous Authority to Operate (cATO). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY2022 to FY2023 is due to the removal of Platform One scope and an update to the Cloud estimate based on component and service data actuals.					
Accomplishments/Planned Programs Subtotals	0.000	13.956	10.032	0.000	10.032

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The DevSecOps Phase 1 demonstrates prototype designs, integration of Defense Industry Base partners and PMOs, appropriate set of technology stacks to be integrated, identifying ROI and buying down technical risk. Technology maturation; putting in place the necessary contracts for talent, licenses and Cloud consumption to support software pipeline delivery for F-35. Production and Development; building, testing and deploying Cloud ecosystems Impact Level (IL) 2 - 6+ and software development pipeline utilizing contracted and government support. Operation and Support; maintain Cloud ecosystem utilizing industry research, resources, talent and technology modernization methodologies with the focus on reducing long-term costs for the program.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DevSecOps Development Support - Talent	Various	Various : Various	0.000	0.000		6.000	Dec 2021	5.107	Dec 2022	-		5.107	Continuing	Continuing	Continuing
DevSecOps Development Support - Licenses	C/FFP	Various : Various	0.000	0.000		4.000	Oct 2021	2.625	Dec 2022	-		2.625	Continuing	Continuing	Continuing
DevSecOps Development Support - Cloud Support	C/FFP	Various : Various	0.000	0.000		3.956	Oct 2021	1.425	Dec 2022	-		1.425	Continuing	Continuing	Continuing
DevSecOps Development Support - Industry Stand-up	C/FFP	Various : Various	0.000	0.000		0.000		0.875	Dec 2022	-		0.875	0.000	0.875	0.875
		Subtotal	0.000	0.000		13.956		10.032		-		10.032	Continuing	Continuing	N/A

Remarks

DevSecOps Ecosystem Standup used for centralized software development in JPO-managed cloud.

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		13.956		10.032		-		10.032	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

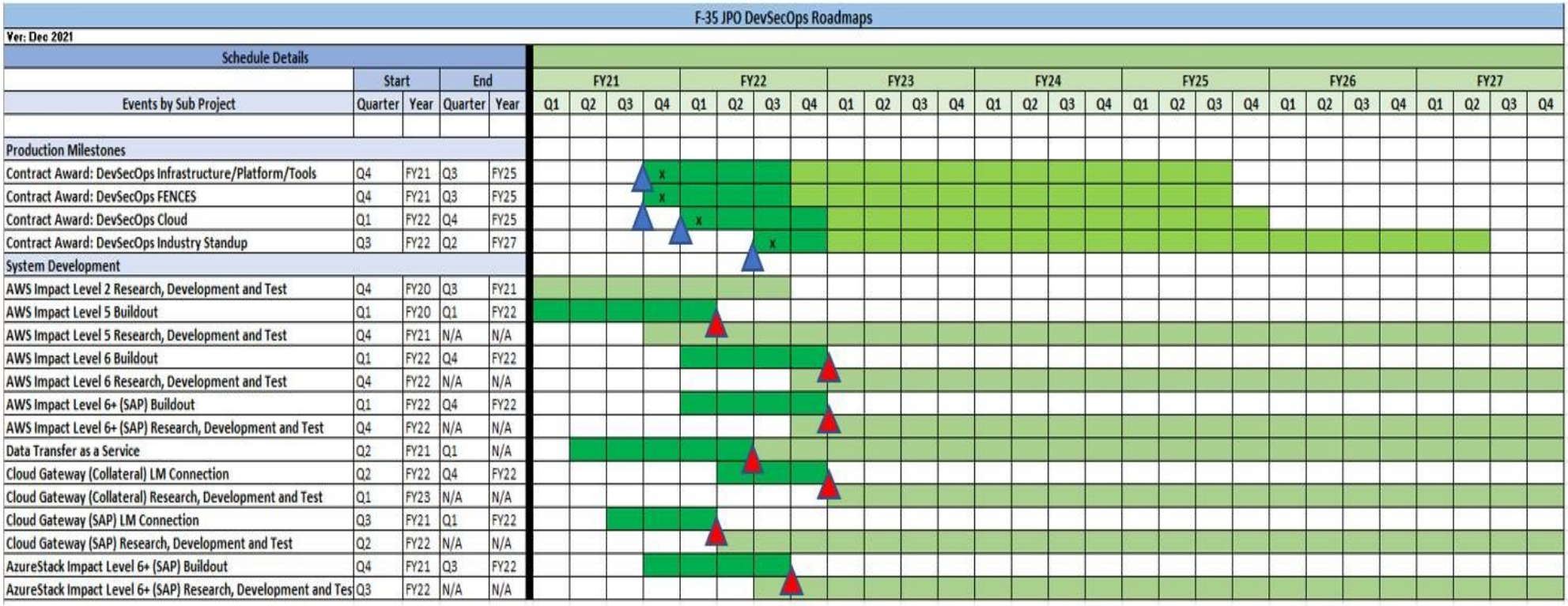


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2561				
System Development: AWS Impact Level 5 Buildout	1	2022	1	2022
System Development: AWS Impact Level 5 Research, Development and Test	1	2022	4	2027
System Development: AWS Impact Level 6 Buildout	4	2022	4	2022
System Development: AWS Impact Level 6 Research, Development and Test	4	2022	4	2027
System Development: AWS Impact Level 6+ (SAP) Buildout	4	2022	4	2022
System Development: AWS Impact Level 6+ (SAP) Research, Development and Test	4	2022	4	2027
System Development: Data Transfer as a Service	2	2022	2	2022
System Development: Cloud Gateway (Collateral) LM Connection	4	2022	4	2022
System Development: Cloud Gateway (Collateral) Research, Development and Test	1	2023	4	2027
System Development: Cloud Gateway (SAP) LM Connection	1	2022	1	2022
System Development: Cloud Gateway (SAP) Research, Development and Test	2	2022	4	2027
System Development: AzureStack Impact Level 6+ (SAP) Buildout	3	2022	3	2022
System Development: AzureStack Impact Level 6+ (SAP) Research, Development and Test	3	2022	4	2027
Production Milestones: DevSecOps Infrastructure/Platform/Tools	1	2022	1	2022
Production Milestones: DevSecOps FENCES	1	2022	1	2022
Production Milestones: DevSecOps Cloud	1	2022	1	2022
Production Milestones: DevSecOps Industry Standup	3	2022	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*				Project (Number/Name) 2562 / *F-35 USN Unique*			
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**
2562: *F-35 USN Unique*	0.000	0.000	8.534	16.533	-	16.533	17.732	18.057	15.523	15.793	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Beginning in FY2022, F-35 USN Unique was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for fiscal years FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2023 request.

A. Mission Description and Budget Item Justification

New USN Unique Project Unit being established in support of the C2D2 effort for discreet tracking of USN efforts to include USN Operational Testing and government engineering support, as well as USN systems engineering efforts and other emerging USN requirements. Efforts continued from PU 2936, not a new start. USN test infrastructure to support integrated test activities in support of OT and DT squadron events in support of Block 4 Development Capabilities to include other operational test and evaluation modernization efforts. Provides basic infrastructure to Edwards AFB as host to the VX-9 Det Edwards Test Squadron.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: USN Unique	0.000	8.534	16.533	0.000	16.533
Articles:	-	-	-	-	-
Description: USN test infrastructure to support integrated test activities in support of OT and DT squadron events in support of Block 4 Development Capabilities to include other operational test and evaluation modernization efforts, as well as USN systems engineering efforts and other emerging USN requirements.					
FY 2022 Plans: Efforts include USN Unique Operational Testing, supporting various integrated tests and investigations. Major testing event include but are not limited to TOPGUN Support, Orange Flag, JSOW LAR Investigation, Patriot Support, Hornet H16 Interoperability, Fleet Anomaly Investigations, Interoperability Large Force Exercise, and other emerging USN test priorities. The following will be funded in order to support various tests and investigations: manpower, weapons, flight hours, range time, and chase, target & tanker support assets.					
FY 2023 Base Plans: Efforts include USN Unique Operational Testing, supporting various integrated tests and investigations. Major testing event include but are not limited to TOPGUN Support, Orange Flag, JSOW LAR Investigation, Patriot Support, Hornet H16 Interoperability, Fleet Anomaly Investigations, Interoperability Large Force Exercise,					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2562 / *F-35 USN Unique*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
and other emerging USN test priorities. The following will be funded in order to support various tests and investigations: manpower, weapons, flight hours, range time, and chase, target & tanker support assets, as well as USN systems engineering efforts and other emerging USN requirements. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Cost increase attributable to additional resources needed to complete testing for ASP 16.1 requirements. Increased resources include range time, flight hours for software testing, manpower for engineering and data analysis support, and infrastructure for hosting the Navy Test Squadron at EDW Air Force base.					
Accomplishments/Planned Programs Subtotals	0.000	8.534	16.533	0.000	16.533

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The C2D2 acquisition strategy is to employ various organic funding sources for the USN unique development efforts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2562 / *F-35 USN Unique*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USN OT Test Support	Various	Various : Various	0.000	0.000		8.534	Dec 2021	16.533	Dec 2022	-		16.533	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		8.534		16.533		-		16.533	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		8.534		16.533		-		16.533	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2562 / *F-35 USN Unique*

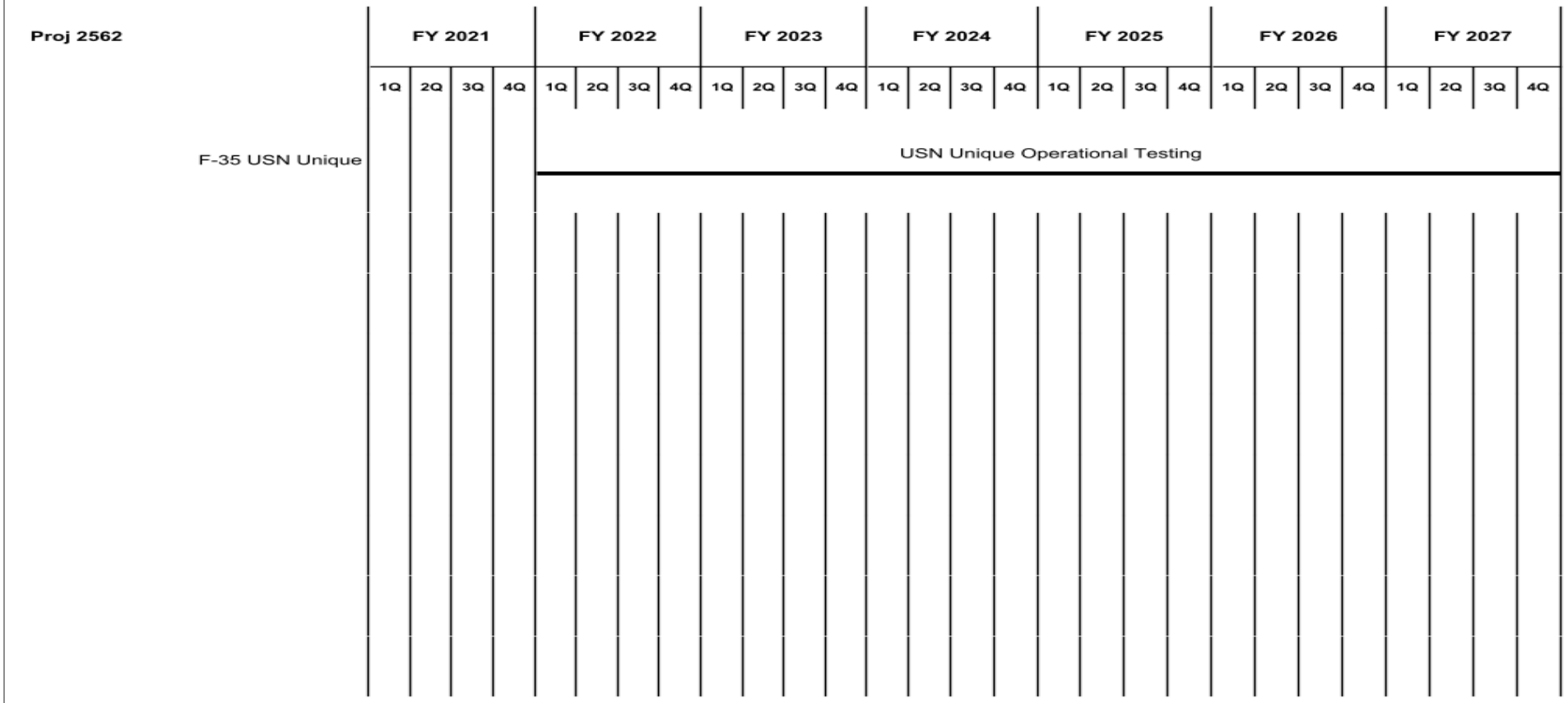


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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2562 / *F-35 USN Unique*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2562				
F-35 USN Unique: USN Unique Operational Testing	1	2022	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*				Project (Number/Name) 2936 / *F-35C C2D2*			
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**
2936: *F-35C C2D2*	1,395.881	377.005	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,772.886
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost, including International partner contributions, USN, USMC, and USAF funding: FY2020:$1,623.467, FY2021:$1,938.386M, FY2022:$2,367.088M.

R-2A table shown above reflects service funding only.

R-2A (section B)/R-3 displays combined program for JSF Continuous Capability Development and Delivery (C2D2).

JSF C2D2 Includes:
USAF PE 0207142F BPAC 675346
USAF PE 0604840F BPAC 675346
USN PE 0604840N/ Project Unit 2936
USMC PE 0604840M Project Unit 3410
USN PE 0604810N/ Project Unit 2936
USMC PE 0604810M Project Unit 2935
USN PE 0604800N Project Unit 9999 (FY14): $1.500M
USMC PE 0604800M Project Unit 9999 (FY14): $1.500M
International Partner Contributions

A. Mission Description and Budget Item Justification

F-35 C2D2 provides continuing incremental upgrades of the three F-35 variants and associated ground equipment. Upgrades are essential capabilities for Air Interdiction and Strategic Attack, Close Air Support, Suppression and Destruction of Enemy Air Defenses, Offensive and Defensive Counter Air and expanded Surface Warfare. The C2D2 acquisition strategy is based upon incremental deliveries of capabilities. The strategy includes periodic deliveries with a focus on hardware, tech refresh and software. C2D2 capability planning includes an efficient transition from F-35 SDD to C2D2. As SDD development activities ramp down C2D2 will assume responsibility for improvements and modernization efforts.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Title: Product Development - Air Vehicle (AV) / Block 4 Planning and Systems Engineering	116.141	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Description: Block 4 Planning and Systems Engineering from preliminarily design and requirements decomposition through completion of Developmental Flight Test for all variants of the F-35 aircraft. Modernization efforts include Requirements Decomposition and continuous development and release of capabilities identified as Block 4 upgrades. This is a continuation of the previous Block 4 developmental contracts, which will include activities leading to successful completion of Developmental Flight Test, to include select facility upgrades required for Block 4 research, development, test and evaluation. Included in Block 4 are upgraded capabilities and continuous improvements to maintain Air System viability against evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), the Fifth Generation Fighter Modernization ICD, and the Block 4 Capability Development Document (CDD), reduce life cycle cost, and improve operational suitability. Continuous risk reduction activities to include Air System Integration, preplanning for subsequent Block 4 Modernization events, and investments to deliver the full Block 4 Air System capabilities as needed. Efforts also included are AARGM-ER, NRE for obsolescence, and 6 In The Bay early systems engineering. C2D2 capability planning includes an efficient transition from F-35 SDD to C2D2. As SDD development activities ramp down C2D2 will assume responsibility for improvements and modernization efforts. Beginning in FY2022, Air Vehicle - Block 4 Planning & Sys Eng was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2554. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: AV Product Development - Technology Refresh 3 (TR-3)	100.520	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Description: Technology Refresh 3 (TR3) conducts post Critical Design Review (CDR) design activities. This effort will develop and deliver a TR3 system through full flight-worthy certification and production readiness review for Lot 15. The design of TR3 subsystems Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit Display Electronics Unit and Display Unit (PCD-EU, PCD-DU) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to support Block 3F functionality and incorporation of all Block 4 capabilities. This work includes nonrecurring engineering for the developing, test, and certification of the ICP, AMS, PCD-EU, and PCD-DU, and includes processing capacity to ensure long term viability for future capabilities. Beginning in FY2022, Air Vehicle - Technology Refresh 3 (TR-3) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2553. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Infrastructure and Support Costs	14.628	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Funding will support infrastructure investment planning and other test planning activities required for Block 4 development, integration, test and evaluation. Funding related to the Integrated Test Force, government, and contractor labor. Support efforts for airframe, air vehicle systems, air ship integration, mission systems, weapons integration, offboard mission support, autonomic logistics development, joint reprogramming enterprise and modeling and joint simulation environment activities, including Nimble Lightning efforts. Funding					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
related to the Integrated Test Force, government, and contractor labor. Other costs in support of ranges, chase planes and DT site operations. USAF only will fund additional PMA to transition to a final hybrid product support integrator (HPSI) which will support sustainment analysis with product support managers, focused on long term strategic planning and transition to a final integrated support plan. Other costs support Technology Investment for Modernization, Cloud based DevSecOps infrastructure, and COCOM Requirements for Coalition Mission Data Files (CMDx) to reduce fratricide in coalition environments. Beginning in FY2022, Infrastructure and Support Costs was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2560. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Test and Evaluation (TE) ***Articles:*** ***Description:*** Integrated Test activities in support of Block 4, to include Lockheed Martin and Pratt & Whitney support at all test sites. Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modification necessary to bring DT aircraft fleet to a more production representative and sustainable configuration, and to develop flight test instrumentation and release test software to meet Block 4 requirements. Additional upgrades required to support development and evaluation of improvements driven by changes in the threat environment and as identified in the Electronic Warfare ICD, the Fifth Generation Fighter Modernization ICS, and the Block 4 Capability Development Document (CDD). Efforts include non-recurring engineering and procurement of a test article to evaluate service life of F-35B STOVL Aircraft.	74.247 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Beginning in FY2022, Test and Evaluation (T&E) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2555. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Maintenance Systems (MxS) Operational Data Integrated Network (ODIN) / Autonomic Logistics Information System (ALIS) Development ***Articles:*** ***Description:*** The F-35 Operational Data Integrated Network (ODIN) is the F-35 program solution for delivering core maintenance and logistics information system solutions to F-35 warfighters. Leveraging agile and modern software development practices, ODIN will replace ALIS to serve as the primary logistics tool to support F-35 warfighter operations, health and diagnostics, mission planning, supply chain management, maintenance, and training. ODIN will substantially decrease F-35 administrator and maintainer workload, increase readiness rates for all F-35 variants, and allow software engineers to rapidly develop and deploy updates in response to changing warfighter requirements and improve data management, quality and integrity. ODIN is intended to provide the data to enable holistic fleet management, improve performance, enhance readiness, and reduce costs to the F-35 program. It comprises both hardware and software, and supports the flow of Unclassified and Classified aircraft and maintenance-related data. Autonomic Logistics Information System (ALIS) will continue to deliver the core logistics and maintenance infrastructure requirements for the F-35 enterprise until ODIN is fielded at all sites. ALIS includes features such as aircraft scheduling, training delivery, record keeping, technical data delivery, supply chain management, maintenance management, pilot and maintenance debriefing, and mission planning. ALIS development is only focused on low cost and high return investments that provide a high confidence return on investment in the short term, significant warfighter impact, and/or offer synergy with ODIN development efforts.	10.670 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Beginning in FY2022, Maintenance Systems (MxS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2557. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Combat Data Systems (CDS) ***Articles:*** ***Description:*** Investment and modernization activities required for Block 4 development, integration, test and evaluation of Mission Data Tools, Verification & Validation Systems, and Mission Planning Software/Hardware. Funding related to key deliveries to Electronic Warfare Squadrons and F-35 Operational Squadrons and enables government and contractor labor for mission planning and joint reprogramming enterprise. Beginning in FY2022, Combat Data Systems (CDS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2558. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:***	22.463 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
Title: Propulsion (PP)	12.814	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Propulsion F135 Block 4 Integrated Flight Test Support includes efforts such as Engine Flight Test, Test Engine Procurements, and other associated government costs. For C2D2 to be able to continue to test all three aircraft variants, propulsion support is required to enable continued flying. Increased flights and flight hours are planned over the next 2 years, requiring elevated propulsion support. All of the current Full Flight Release (FFR) engines supporting Flight Test are at or nearing their life limits, requiring the purchase of new Initial Service Release (ISR) engines to replace them. This replacement effort is planned to occur over the next few years to enable continued flight capability. Beginning in FY2022, Propulsion (PP) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2556. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: Training Systems (TSS)	22.528	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Training System efforts include continuous development and release of capabilities identified as Block 4 upgrades integral to an aligned Air System. This is a continuation of previous Block 4 developmental efforts, which will include: capability development, architecture upgrades to support capability delivery, enhanced synthetic threat integration, opportunities to leverage JSE investments toward Training System requirements, and facility/lab upgrades required for research, development, test, and evaluation. Included in Block 4 are upgraded capabilities and continuous improvements to maintain Air System viability and alignment against					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), Fifth Generation Fighter Modernization ICD, Block 4 Capability Development Document (CDD), and TSS PMO Roadmap. Distributed Mission Training (DMT) Development and Test from preliminary design through completion of development, testing and fielding of the initial DMT capability for the United States Air Force, United States Navy, and United States Marine Corps. The DMT effort is developing the Joint Interoperability Interface (JII) as the filter for the F-35 simulator to interface with the various network standards. The DMT hardware and software components will be added to the Pilot Training Device (PTD) configuration baseline, yielding a fielded training capability for all F-35 services and customers with distributed training network capability. This is a continuation of previous DMT efforts. Included in DMT are upgraded capabilities and continuous improvements to maintain Air System viability against evolving threats, reduce life cycle cost, and improve operational suitability. Funding will support hardware purchase and planning for installation and test activities required for DMT development, integration, test, and evaluation. Funding related to contractor labor. Support efforts for Full Mission Simulator, Deployable Mission Rehearsal Trainer, and Tactical Environment Simulator capability developments. The Joint Simulation Environment (JSE) will continue efforts to allow for completion of F-35 IOT&E events at the Patuxent River NAS facility. Efforts to upgrade JSE capabilities at Patuxent River NAS to support future F-35 Block 4 needs will continue and efforts to bring future JSE facilities at Wright Patterson AFB, Edwards AFB, and Nellis AFB online in FY23. Efforts to determine feasibility of integrating the JSE, F-35 In-a-Box (FIAB) and the F-35 Effects Based Simulator (EBS) with F-35 Training software to move towards a common software architecture will begin. F-35 EBS will continue development of unclassified and classified capabilities, and deliver formal software releases to current and new domestic and international partners and stakeholders. Continuation of efforts to support events involving the F-35, including Nimble Lightning, at the Virtual Warfare Center (VWC). Beginning in FY2022, Training Systems and Simulation (TSS) was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Efforts continued in Project Unit 2559. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Title: DevSecOps	2.994	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Beginning in FY2022, DevSecOps was established as a separate, distinct project within the Continuous Capability Development & Delivery (C2D2) Program Element, per Congressional direction. Efforts are continued from Project Unit 2936, which is still included at the end of the R-2A for Fiscal years FY2020 & FY2021. This Project Unit has also been updated to reflect the directed project categories to provide traceability between current execution and the FY2022 request. ***FY 2022 Plans:*** Efforts continued in Project Unit 2561. ***FY 2023 Base Plans:*** N/A ***FY 2023 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	377.005	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• RDT&E/0604840M/3410: *F-35B C2D2*	370.431	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,813.434
• International: *International Continuous Capability Development and Delivery*	359.626	361.286	211.292	-	211.292	208.053	177.542	0.000	0.000	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• USAF RDT&E/0604840F: *USAF Continuous Capability Development and Delivery*	785.336	987.522	956.999	-	956.999	766.466	654.238	639.544	0.000	Continuing	Continuing

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

D. Acquisition Strategy

The C2D2 acquisition strategy is to employ both Cost and Fixed Price Incentive contracts for the Block 4 engineering and development efforts. A new modernization contract structure will be established for all post SDD Block 4 efforts. In addition, a separate Basic Ordering Agreement or Indefinite Quantity/Indefinite Delivery contract is planned to provide a long term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future C2D2 capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV Prime LM Phase II Development	C/CPIF	Lockheed Martin : FT. Worth, TX	372.179	107.978	Nov 2020	0.000		0.000		-		0.000	0.000	480.157	1,515.177
AV Prime LM TR-3 Development	C/CPIF	Lockheed Martin : FT. Worth, TX	253.597	100.520	Nov 2020	0.000		0.000		-		0.000	0.000	354.117	864.117
TSS VWC Nimble Lightening	C/CPFF	Various : Various	5.706	0.575	Jan 2021	0.000		0.000		-		0.000	0.000	6.281	23.781
TE Flight Test Assets	Various	Lockheed Martin : FT. Worth, TX	21.241	5.290	Dec 2020	0.000		0.000		-		0.000	0.000	26.531	432.531
TE Prime LM TBD DT AC Viability	C/CPFF	Lockheed Martin : FT. Worth, TX	29.302	3.000	Dec 2020	0.000		0.000		-		0.000	0.000	32.302	447.302
PP Prime PW Propulsion	C/CPIF	Pratt Whitney : East Hartford, Connecticut	39.263	11.064	Nov 2020	0.000		0.000		-		0.000	0.000	50.327	270.327
TE Prime LM Developmental Foundation Contract	C/CPIF	Lockheed Martin : FT. Worth, TX	112.876	35.150	Nov 2020	0.000		0.000		-		0.000	0.000	148.026	585.826
CDS Prime LM JRE Dev.	C/CPIF	Lockheed Martin : FT. Worth, TX	17.845	16.952	Nov 2020	0.000		0.000		-		0.000	0.000	34.797	624.713
MxS Prime LM ALIS	C/CPFF	Lockheed Martin : FT. Worth, TX	8.976	0.630	Dec 2020	0.000		0.000		-		0.000	0.000	9.606	168.606
MxS Prime LM ODIN	C/CPIF	Lockheed Martin : FT. Worth, TX	57.229	4.352	Nov 2020	0.000		0.000		-		0.000	0.000	61.581	61.581
AV Prime LM Air Vehicle Integration	C/CPFF	Lockheed Martin : FT. Worth, TX	55.000	0.000		0.000		0.000		-		0.000	0.000	55.000	55.000
TE Prime LM F-35B Fatigue Test Article	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
TSS Prime LM Training Investments	C/CPIF	Lockheed Martin : FT. Worth, TX	11.490	14.796	Dec 2020	0.000		0.000		-		0.000	0.000	26.286	142.286
AV Systems Engineering	Various	Various : Various	22.072	3.637	Jan 2021	0.000		0.000		-		0.000	0.000	25.709	113.709
TSS Prime LM - JSE	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	3.175	Dec 2020	0.000		0.000		-		0.000	0.000	3.175	3.175
CDS Prime LM Mission Planning Software Environment (MPSE)	C/CPIF	Lockheed Martin : FT. Worth, TX	0.125	1.315	Dec 2020	0.000		0.000		-		0.000	0.000	1.440	1.440

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	1,006.901	308.434		0.000		0.000		-		0.000	0.000	1,315.335	N/A

Remarks

Changed Prime LM Nimble Lightening to TSS VWC Nimble Lightening, added PMO identifiers to Cost Category Item Name description, added TSS Prime LM - JSE, CDS Prime LM Mission Planning Software Environment (MPSE).

R-2A Categories include:
Air Vehicle / Block 4 Planning & Systems Engineering: AV Prime LM Phase II Development, Prime LM Air Vehicle Integration, AV Systems Engineering.
Technology Refresh 3 (TR-3): Prime LM TR-3 Development
Test and Evaluation (TE): Flight Test Asset, Prime LM DT AC Viability, Prime Development Foundation Contract, Prime LM F-35B Fatigue Test Article
Maintenance Systems (MxS): Prime LM ALIS, Prime LM ODIN
Combat Data Systems (CDS): Prime TBD JRE Dev, Prime LM MPSE
Propulsion (PP): Prime PW Propulsion
Training Systems (TSS): Prime LM Training Investments, Prime LM - JSE, VWC Nimble Lightening

Prime LM Phase II Development Contract is a hybrid CPIF/CPAF contract.
Prime LM F-35B Fatigue Test Article is a hybrid CPIF/CPFF contract.
Per USD(A&S) announcement, changing ALIS Next to ALIS / ODIN.
Prime LM ALIS / ODIN Contract is a hybrid CPFF/CPIF contract.
Flight Test assets include weapons to support Test and assets needed for flight test instrumentation

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS Development Support - JSE	WR	Various : Various	40.948	3.982	Dec 2020	0.000		0.000		-		0.000	0.000	44.930	44.930
AV Mission Systems Support	Various	Various : Various	30.845	2.831	Dec 2020	0.000		0.000		-		0.000	0.000	33.676	76.759
AV Vehilce Systems Support	Various	Various : Various	2.863	0.725	Dec 2020	0.000		0.000		-		0.000	0.000	3.588	18.856
TSS Development Support - Training Systems	Various	Various : Various	7.389	0.000		0.000		0.000		-		0.000	0.000	7.389	41.902
AV CSO Development Support	Various	Various : Various	8.594	0.970	Dec 2020	0.000		0.000		-		0.000	0.000	9.564	56.564

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDS JRE IPT Development Support	Various	Various : Various	5.770	1.906	Dec 2020	0.000		0.000		-		0.000	0.000	7.676	109.760
MxS Dev Ops Development Support	Various	Various : Various	39.220	1.868	Mar 2021	0.000		0.000		-		0.000	0.000	41.088	250.088
MxS ALIS / ODIN Development Support	Various	Various : Various	27.582	3.820	Dec 2020	0.000		0.000		-		0.000	0.000	31.402	66.402
CDS MPSE Re-Arch Development Support	Various	Various : Various	1.311	2.289	Dec 2020	0.000		0.000		-		0.000	0.000	3.600	3.600
PP Propulsion Development Support	Various	Various : Various	2.033	1.750	Dec 2020	0.000		0.000		-		0.000	0.000	3.783	3.783
		Subtotal	166.555	20.141		0.000		0.000		-		0.000	0.000	186.696	N/A

Remarks

Changed JSE/IPT Development Support to TSS Support Cost - JSE and to various, changed ALIS DevOps Development Support to MxS Dev Ops Development Support, changed JRE Development Support to CDS JRE IPT Development Support, changed IPT Development Support to AV Mission Systems Support and changed to various, changed IPT Development Support to AV Vehicle Systems Support and changed to various, changed ALIS/ODIN Development support to MxS ALIS/ODIN Development Support, added CDS MPSE Re-Arch Development Support, added PP Propulsion Development Support, and changed IPT Support to TSS Development Support - Training Systems.

Changed the name of AV Tech Planning Development Support to AV CSO Development Support.

R-2A Categories include:
Air Vehicle (AV) / Block 4 Planning & Systems Engineering: Missions Systems Support, Vehicle Systems Support, IPT Development Support, Tech Planning
Maintenance Systems (MxS)Dev Ops Development Support, Maintenance Systems Development Support, ALIS/ODIN Development Support
Combat Data Systems (CDS) : MPSE Re-Arch Development Support, JRE IPT Development Support
Propulsion (PP): Propulsion Development Support
Training Systems (TSS): Development Support - JSE, Development Support - Training Systems

Per USD(A&S) announcement, changing ALIS Next to ALIS / ODIN.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TE Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	47.417	5.550	Dec 2020	0.000		0.000		-		0.000	0.000	52.967	232.967
TE Developmental Test & Evaluation	WR	NAWCWD : China Lake, CA	4.966	2.000	Dec 2020	0.000		0.000		-		0.000	0.000	6.966	47.436
TE Developmental Test & Evaluation	MIPR	Edwards AFB : Edwards AFB, CA	36.275	7.000	Dec 2020	0.000		0.000		-		0.000	0.000	43.275	153.745
TE Developmental Test & Evaluation	Various	Various : Various	5.325	1.693	Dec 2020	0.000		0.000		-		0.000	0.000	7.018	64.105
TE Operational Test & Evaluation	MIPR	Nellis AFB : Nellis AFB, NV	11.171	11.690	Dec 2020	0.000		0.000		-		0.000	0.000	22.861	95.361
TE USMC Operational Test & Evaluation	WR	Yuma Air Station : Yuma, AZ	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	24.500
TE USN Operational Test & Evaluation	WR	Various : Various	1.000	2.875	Nov 2020	0.000		0.000		-		0.000	0.000	3.875	72.175
TE Ground Test	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	106.154	30.808		0.000		0.000		-		0.000	0.000	136.962	N/A

Remarks

Added TE Ground Test line and added PMO Specific identifier in front of Cost Category Item Name description.

All lines total to Test and Evaluation (TE) R-2A.

Added USMC Operational Test & Evaluation line, USMC added funding for service unique Operational Test support, broken out from Operational Test & Evaluation line.

Added USN Operational Test & Evaluation line, USN added funding for service unique Operational Test support, broken out from Operational Test & Evaluation line.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFLCMC Civilian Pay	C/BA	AFCLMC CIVPAY : Wright Patterson, AFB	37.886	0.000		0.000		0.000		-		0.000	0.000	37.886	269.496

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Financial Mgmt Database Support IDS	C/BA	Various : Various	0.812	0.000		0.000		0.000		-		0.000	0.000	0.812	5.113
Earned Value/Finance/ Cost ACT-I	C/BA	Various : Various	3.500	0.000		0.000		0.000		-		0.000	0.000	3.500	3.500
Operating Core Support	C/FP	Various : Various	14.574	1.000	Dec 2020	0.000		0.000		-		0.000	0.000	15.574	60.916
Other Core Contractor Sppt.	WR	Various : Various	6.382	0.000		0.000		0.000		-		0.000	0.000	6.382	6.382
Travel	Various	Various : Various	4.151	0.400	Oct 2020	0.000		0.000		-		0.000	0.000	4.551	4.551
DevSecOps	Various	Various : Various	7.697	2.994	Apr 2021	0.000		0.000		-		0.000	0.000	10.691	273.691
Prior Year - MGT Services - Cost no longer funded in FYDP	Various	Various : Various	41.269	0.000		0.000		0.000		-		0.000	0.000	41.269	41.269
Statutory Reductions	C/BA	Various : Various	0.000	13.228	Apr 2021	0.000		0.000		-		0.000	0.000	13.228	13.228
		Subtotal	116.271	17.622		0.000		0.000		-		0.000	0.000	133.893	N/A

Remarks

All lines total to Infrastructure and Support.

Added DevSecOps line as stated in the FY22 President's Budget.

Beginning in FY20 HPSI will be in a separate BPAC and no longer included in DoN C2D2 budget docs.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,395.881	377.005		0.000		0.000		-		0.000	0.000	1,772.886	N/A

Remarks

Subtotals and totals may not add due to rounding.
Prior Year reflects only PE 0604840M/N due to PE 0604810M/N ending in FY18 and being replaced by PE 0604840M/N in FY19 as budget moves from BA05 to BA07.
Prior Years reflects $414.998M USAF/$215.366M USN/$222.644 USMC/$209.763M International/Total $1,062.771M
FY 2020 reflects $642.371M USAF/$342.8600M USN/$380.232M USMC/$258.004M International/Total $1,623.467M
FY 2021 reflects $785.336M USAF/$413.875M USN/$379.549M USMC/$359.626M International/Total $1,938.386M
FY 2022 reflects $549.279M USAF/$328.999M USN/$349.197M USMC/$224.501M International/Total $1,451.976M
R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract

JSF Continuous Capability Development and Delivery (C2D2) Includes:
USAF PE 0207142F BPAC 675346
USAF PE 0604840F BPAC 675346
USN PE 0604810N Project Unit 2936 - ends FY18
USMC PE 0604810M Project Unit 2935 - ends FY18
USN PE 0604840N Project Unit 2936 - begins FY19
USMC PE 0604840M Project Unit 2935 - begins FY19
USN PE 0604800N Project Unit 9999 (FY14): $1.500
USMC PE 0604800M Project Unit 999 (FY14) : $1.500

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

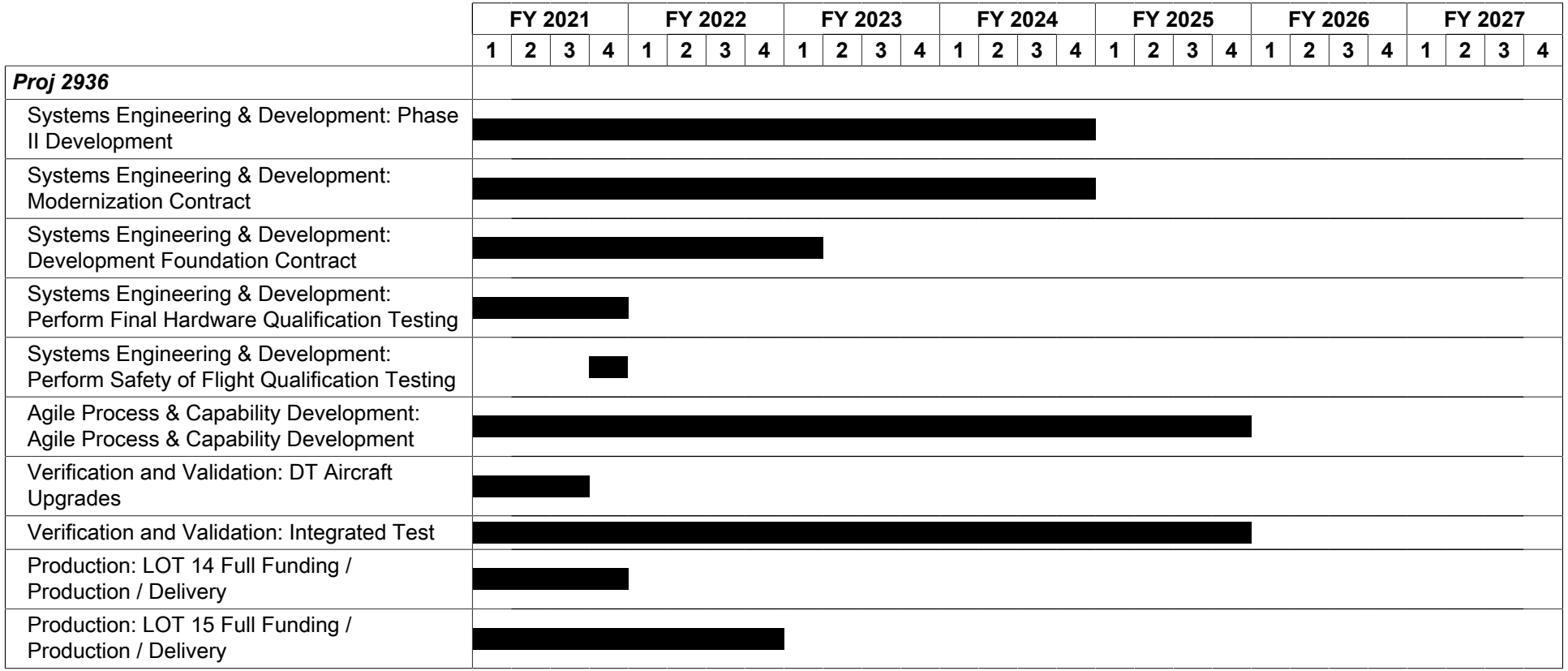

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2936				
Systems Engineering & Development: Phase II Development	1	2021	4	2024
Systems Engineering & Development: Modernization Contract	1	2021	4	2024
Systems Engineering & Development: Development Foundation Contract	1	2021	1	2023
Systems Engineering & Development: Perform Final Hardware Qualification Testing	1	2021	4	2021
Systems Engineering & Development: Perform Safety of Flight Qualification Testing	4	2021	4	2021
Agile Process & Capability Development: Agile Process & Capability Development	1	2021	4	2025
Verification and Validation: DT Aircraft Upgrades	1	2021	3	2021
Verification and Validation: Integrated Test	1	2021	4	2025
Production: LOT 14 Full Funding / Production / Delivery	1	2021	4	2021
Production: LOT 15 Full Funding / Production / Delivery	1	2021	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 9999 / *Congressional Adds*	

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
9999: *Congressional Adds*	0.000	0.000	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Interest Items not included in other Projects.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022
Congressional Add: Joint enterprise data interoperability for F-35 depots	0.000	5.000
FY 2021 Accomplishments: N/A		
FY 2022 Plans: Commence development for Joint enterprise data interoperability for F-35 depots.		
Congressional Adds Subtotals	0.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint enterprise data interoperability	Various	Various : Various	0.000	0.000		5.000	May 2022	0.000		-		0.000	0.000	5.000	-
		Subtotal	0.000	0.000		5.000		0.000		-		0.000	0.000	5.000	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		5.000		0.000		-		0.000	0.000	5.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 9999 / *Congressional Adds*

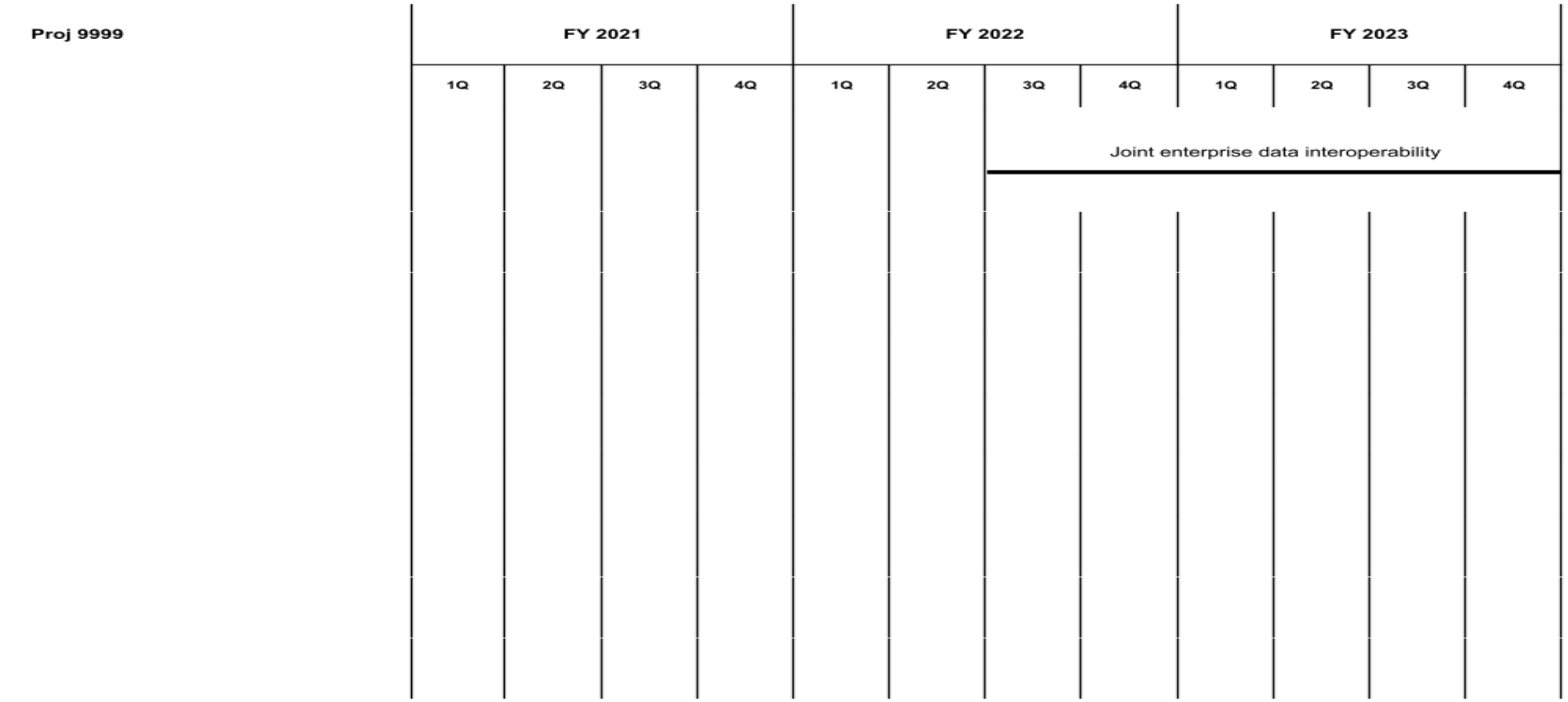

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Joint enterprise data interoperability	3	2022	4	2024