Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy												Date: March 2023
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*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	473.749	503.365	543.834	-	543.834	534.928	435.450	417.632	417.465	Continuing	Continuing
0358: *Utility and Subsystem Support to Mission Systems*	0.000	0.000	0.000	72.463	-	72.463	85.558	71.607	41.454	74.343	Continuing	Continuing
2553: *Air Vehicle - Technology Refresh 3 (TR-3)*	0.000	66.864	33.618	3.004	-	3.004	1.196	1.138	5.138	10.501	Continuing	Continuing
2554: *Air Vehicle Block 4 Planning & Sys Eng*	0.000	161.401	192.854	178.378	-	178.378	179.316	119.674	110.955	134.644	Continuing	Continuing
2555: *Test and Evaluation (T&E)*	0.000	120.411	128.128	132.591	-	132.591	103.729	108.056	97.354	76.755	Continuing	Continuing
2556: *Propulsion (PP)*	0.000	14.547	7.415	65.769	-	65.769	62.896	45.594	74.570	29.306	Continuing	Continuing
2557: *Maintenance Systems (MxS)*	0.000	22.267	25.090	18.061	-	18.061	19.038	15.909	14.896	14.650	Continuing	Continuing
2558: *Combat Data Systems (CDS)*	0.000	20.365	26.334	17.707	-	17.707	16.190	9.848	19.409	9.356	Continuing	Continuing
2559: *Training Systems and Simulation (TSS)*	0.000	38.761	36.995	30.151	-	30.151	32.221	31.529	33.479	31.382	Continuing	Continuing
2560: *Infrastructure and Support Costs*	0.000	2.425	2.616	2.675	-	2.675	2.724	3.071	3.164	2.874	Continuing	Continuing
2561: *DevSecOps*	0.000	13.578	10.032	8.367	-	8.367	12.272	12.369	1.487	17.612	Continuing	Continuing
2562: *F-35 USN Unique*	0.000	8.303	16.533	14.668	-	14.668	19.788	16.655	15.726	16.042	Continuing	Continuing
9999: *Congressional Adds*	0.000	4.827	23.750	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	28.577

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 and additional capabilities as part

of the C2D2 acquisition strategy 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.

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 FY2024 continue with the incremental releases of capabilities & execution of continuous development efforts as part of the C2D2 acquisition strategy. 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	486.962	491.513	386.118	-	386.118
Current President's Budget	473.749	503.365	543.834	-	543.834
Total Adjustments	-13.213	11.852	157.716	-	157.716
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-11.898			
• Congressional Rescissions	-	-			
• Congressional Adds	-	23.750			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-13.214	0.000			
• Program Adjustments	0.000	0.000	156.085	-	156.085
• Rate/Misc Adjustments	0.001	0.000	1.631	-	1.631

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
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 2022	FY 2023
Project: 9999: *Congressional Adds*		
Congressional Add: *Joint Enterprise Data Interoperability for F-35 Depots*	4.827	5.000
Congressional Add: *F135 Engine Enhancement*	0.000	18.750
Congressional Add Subtotals for Project: 9999	4.827	23.750
Congressional Add Totals for all Projects	4.827	23.750

Change Summary Explanation

The FY2024 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.

FY2024 was increased by $179.6 million since the previous President's Budget submission due to accelerated weapons capabilities development and integration, cyber co-pilot capability integration & cyber technologies, and increased flight test infrastructure capacity & enhanced engine program (EEP) development.

PU 0358 is a New Start.

Technical: Not applicable.
Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 0358 / *Utility and Subsystem Support to Mission Systems*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
0358: *Utility and Subsystem Support to Mission Systems*	0.000	0.000	0.000	72.463	-	72.463	85.558	71.607	41.454	74.343	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

As the United States and its allies add new capabilities to outpace the growing threat of the People Republic of China other near-peer threats, increased cooling and electrical power capacity will be required to support these new capabilities. In order to address increased thermal loads from new Mission Systems requirements, an upgrade to the Power Thermal Management System (PTMS) and Fuel Thermal Management System (FTMS) is required.

A. Mission Description and Budget Item Justification

This is a NEW START. Current Mission System planning estimates due to Block 4 capabilities and beyond indicate that additional cooling is required for aircraft beginning in Lot 22 (FY28). This upgrade/modification consists of an upgrade to the current Honeywell PTMS that includes larger heat exchangers, shifting some systems from the cold liquid loop to the hot liquid loop, increasing system pressure, increasing pump speeds and raising compressor discharge temperatures. This modification upgrades components that are relatively low cost and already at a high technical readiness level. All PTMS changes for this level of cooling would be accomplished within the existing PTMS bay and there are not expected to be any necessary changes to the capacity of the cold liquid loop or the hot liquid loop. This work includes nonrecurring engineering for the development, test, and certification of the upgraded PTMS system to ensure suitable cooling is available for future capacities. The Government has assessed that EMD phase would take 5-6 years.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: PTMS Upgrade	0.000	0.000	72.463	0.000	72.463
Articles:	-	-	-	-	-
Description: Current Mission System planning estimates due to Block 4 capabilities and beyond indicate that additional cooling is required for aircraft beginning in Lot 22 (FY28). This upgrade/modification consists of an upgrade to the current Honeywell PTMS that includes larger heat exchangers, shifting some systems from the cold liquid loop to the hot liquid loop, increasing system pressure, increasing pump speeds and raising compressor discharge temperatures. This modification upgrades components that are relatively low cost and already at a high technical readiness level. All PTMS changes for this level of cooling would be accomplished within the existing PTMS bay and there are not expected to be any necessary changes to the capacity of the cold liquid loop or the hot liquid loop. This work includes nonrecurring engineering for the development, test, and certification of the upgraded PTMS system to ensure suitable cooling is available for future capacities. The Government has assessed that EMD phase would take 5-6 years.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 0358 / *Utility and Subsystem Support to Mission Systems*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
FY 2023 Plans: N/A ***FY 2024 Base Plans:*** The PTMS Upgrade program will begin nonrecurring engineering effort to increase PTMS Upgrade cooling requirements. This work includes the necessary labor and nonrecurring engineering to support development of the cooling PTMS system and a detailed schedule of EMD to include the necessary operational testing and flight tests. Note: This is a New Start ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase from FY2023 to FY2024 is due to the PTMS Upgrade requirements needed to meet Mission Systems Capabilities.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	72.463	0.000	72.463

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 0358 / *Utility and Subsystem Support to Mission Systems*	

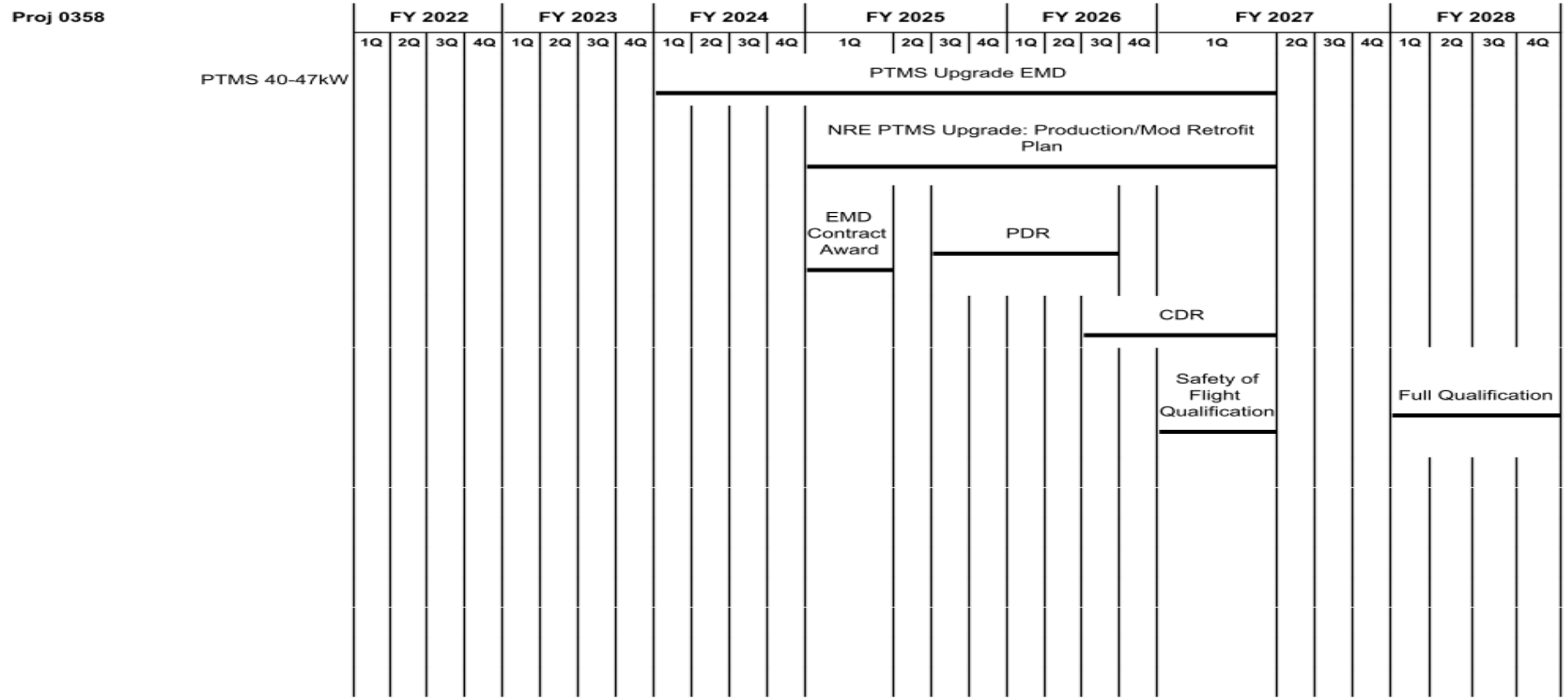
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SEIT NRE System	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.000		72.463	Feb 2024	-		72.463	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		72.463		-		72.463	Continuing	Continuing	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		72.463		-		72.463	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 0358 / *Utility and Subsystem Support to Mission Systems*



2024PB - 0604840N - 0358

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 0358 / *Utility and Subsystem Support to Mission Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0358				
PTMS Upgrade: PTMS Upgrade EMD	1	2024	1	2027
PTMS Upgrade: NRE PTMS Upgrade: Production/Mod Retrofit Plan	1	2025	1	2027
PTMS Upgrade: EMD Contract Award	1	2025	1	2025
PTMS Upgrade: PDR	3	2025	3	2026
PTMS Upgrade: CDR	3	2026	1	2027
PTMS Upgrade: Safety of Flight Qualification	1	2027	1	2027
PTMS Upgrade: Full Qualification	1	2028	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
2553: *Air Vehicle - Technology Refresh 3 (TR-3)*	0.000	66.864	33.618	3.004	-	3.004	1.196	1.138	5.138	10.501	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 FY2024 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. 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Technology Refresh 3 (TR-3)	66.864	33.618	3.004	0.000	3.004
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. 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.					
FY 2023 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 2024 Base Plans:*** The TR-3 program will complete final laboratory system integration and test, flight test, and system certification requirements for fleet fielding. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease from FY2023 to FY2024 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 development at the Prime.					
Accomplishments/Planned Programs Subtotals	66.864	33.618	3.004	0.000	3.004

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. 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 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 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	62.002	Oct 2021	33.618	Oct 2022	3.004	Oct 2023	-		3.004	0.000	98.624	98.624
TR-3 Prime LM Next Gen DAS Shipsets Proc	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	4.638	Oct 2021	0.000		0.000		-		0.000	0.000	4.638	4.638
TR-3 Prime LM OT Next Gen DAS NRE	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	0.122	Nov 2021	0.000		0.000		-		0.000	0.000	0.122	0.122
		Subtotal	0.000	66.762		33.618		3.004		-		3.004	0.000	103.384	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TR-3 Project Support	MIPR	Various : Various	0.000	0.102	Nov 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.102		0.000		0.000		-		0.000	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	66.864		33.618		3.004		-		3.004	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
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)*

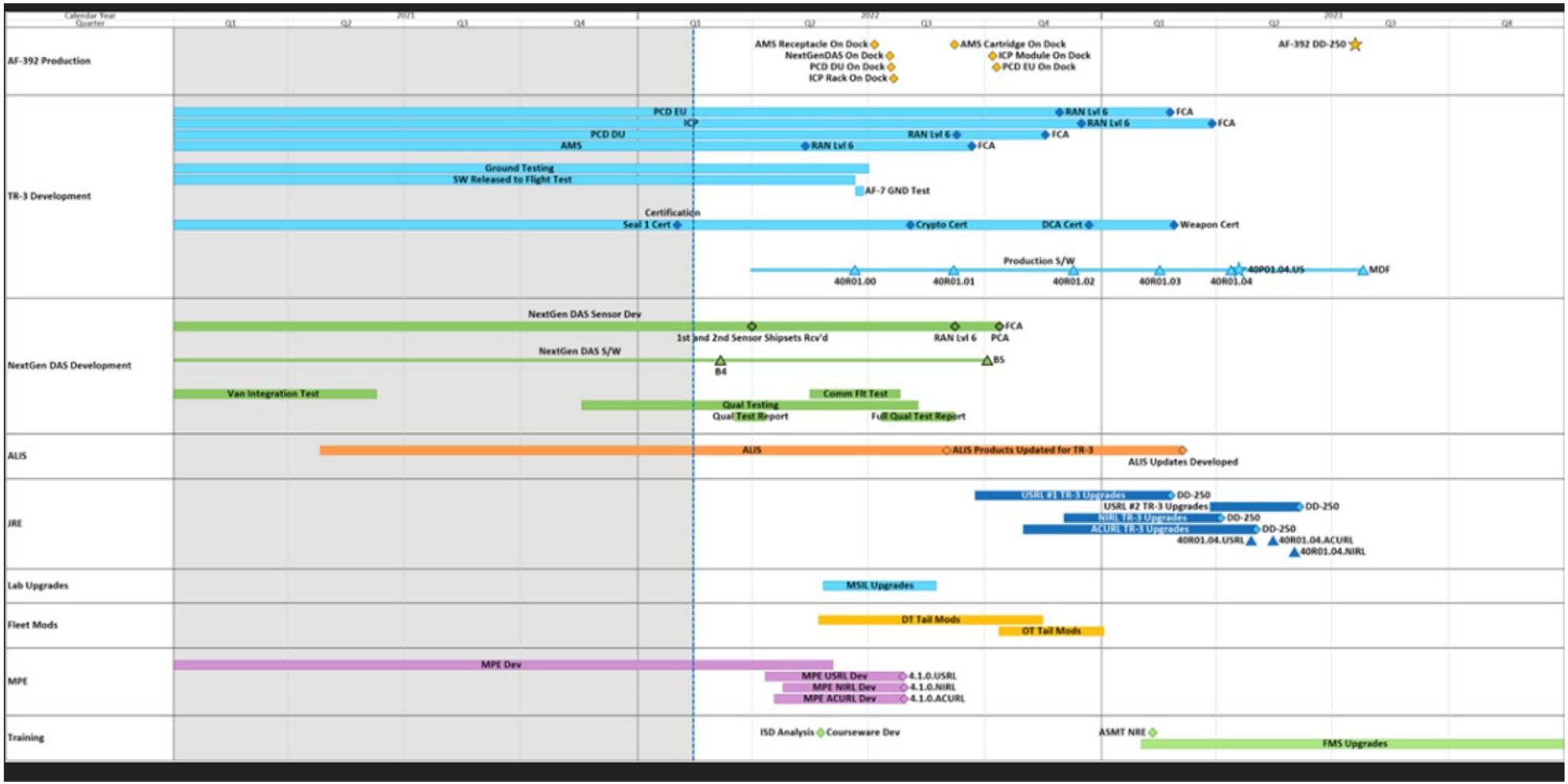


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2553 / *Air Vehicle - Technology Refresh 3 (TR-3)*

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	1	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	4	2022	4	2022
Technology Refresh 3 (TR-3): Perform TR-3 Flight Test	4	2022	2	2023
Technology Refresh 3 (TR-3): Perform Final Hardware Qualification Testing	1	2022	1	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 2024 Navy			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
2554: *Air Vehicle Block 4 Planning & Sys Eng*	0.000	161.401	192.854	178.378	-	178.378	179.316	119.674	110.955	134.644	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 FY2024 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, 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 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Air Vehicle Planning & Sys Eng	161.401	192.854	178.378	0.000	178.378
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 2023 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 systems, future capabilities studies and weapons integration efforts. Continue support for Block 4 Capabilities and support preliminary systems engineering efforts associated with 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 2024 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

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 advanced arresting gear (EMALS-AAG) launch bulletins and related work, mission systems, future capabilities studies and weapons integration efforts. Continue support for Block 4 Capabilities and support preliminary systems engineering efforts associated with AARGM-ER, AGM-158 family of weapons, and increased air-to-air missile carriage. Continued systems engineering, integration, and test (SEIT) development for avionics, sensors, weapons, studies & analyses, and risk reduction efforts. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease from FY2023 to FY2024 is due to completion of development and integration of the Block 4 capabilities. With the completion of SDD and introduction of the Block 4 development program, nearly 70 new capabilities were approved started, leading to an initial bow wave of development and associated costs culminating in FY23. The resultant steady state of development efforts in FY24 and beyond are projected to be at a lesser capacity than the peak established in the FY23 budget year.					
Accomplishments/Planned Programs Subtotals	161.401	192.854	178.378	0.000	178.378

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 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 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	143.823	Oct 2021	161.813	Oct 2022	123.293	Nov 2023	-		123.293	121.971	550.900	550.900
AV Prime LM Phase II Fee	C/CPIF	Lockheed Martin : Ft Worth TX	0.000	5.122	Oct 2021	5.122	Oct 2022	21.300	Nov 2023	-		21.300	0.000	31.544	31.544
AV Prime LM Air Vehicle Integration	C/CPFF	Lockheed Martin : Ft Worth TX	0.000	1.250	Oct 2021	1.250	Oct 2022	1.560	Nov 2023	-		1.560	1.024	5.084	5.084
AV Systems Engineering	Various	Various : Various	0.000	3.191	Dec 2021	4.312	Dec 2022	5.883	Nov 2023	-		5.883	7.410	20.796	20.796
AV Cyber Survivability	Various	Various : Various	0.000	0.000		4.917	Dec 2022	9.322	Nov 2023	-		9.322	32.500	46.739	46.739
		Subtotal	0.000	153.386		177.414		161.358		-		161.358	162.905	655.063	N/A

Remarks

1. Breaking out Cyber survivability as separate line item in FY23.
2. Phase 2.3 Performance Incentive Fee (PIF) events are tagged to incrementally mature hardware deliveries. FY24 will see increased hardware deliveries as development with potential PIF payouts upon delivery.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV Mission Systems Support	Various	Various : Various	0.000	5.265	Nov 2021	3.940	Nov 2022	5.009	Nov 2023	-		5.009	8.350	22.564	22.564
AV Vehicle Systems Support	Various	Various : Various	0.000	0.250	Nov 2021	8.500	Nov 2022	8.250	Nov 2023	-		8.250	2.500	19.500	19.500
AV CSO Development Support	Various	Various : Various	0.000	2.500	Nov 2021	3.000	Nov 2022	3.761	Nov 2023	-		3.761	Continuing	Continuing	Continuing
		Subtotal	0.000	8.015		15.440		17.020		-		17.020	Continuing	Continuing	N/A

Remarks

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
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 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	161.401		192.854		178.378		-		178.378	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
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*

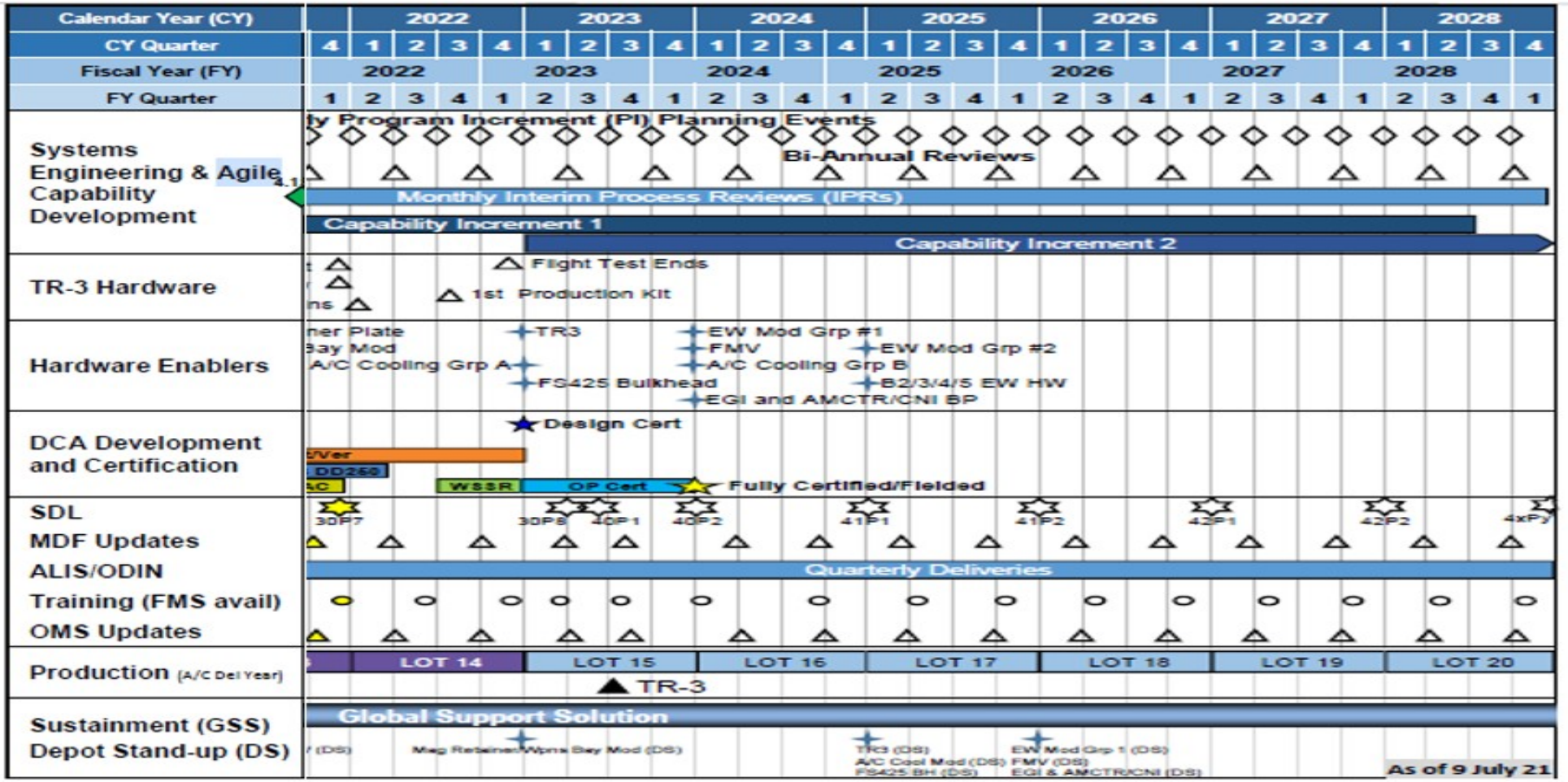


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2554 / *Air Vehicle Block 4 Planning & Sys Eng*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2554				
Systems Engineering & Agile Capability Development: Planning Events	1	2022	4	2028
Systems Engineering & Agile Capability Development: IPRs	1	2022	4	2028
Hardware Enablers: A/C Cooling	1	2022	4	2025
Hardware Enablers: Electronic Warfare (EW) Upgrade	1	2022	1	2028
Hardware Enablers: Embedded GPS Inertial (EGI)	1	2022	1	2027
Hardware Enablers: Beyond Line Of Sight (BLOS) Communications	4	2022	4	2028
Production: LOT 15	2	2023	1	2024
Production: LOT 16	2	2024	1	2025
Production: LOT 17	2	2025	1	2026
Production: LOT 18	2	2026	1	2027
Production: LOT 19	2	2027	1	2028
Production: LOT 20	2	2028	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2555: *Test and Evaluation (T&E)*	0.000	120.411	128.128	132.591	-	132.591	103.729	108.056	97.354	76.755	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 FY2024 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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**
Title: Development Foundation Contract (DFC) Flight Test and Tech Refresh	41.417	42.838	41.524	0.000	41.524
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 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 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 2023 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 sustain, replace, upgrade, and modify hardware and software at the module level and facilitate test integration with the development process. ***FY 2024 Base Plans:*** Support F-35 capability enhancements. DFC will provide flight test for C2D2 Block 4 capabilities including weapons testing, as well as continue annualized equipment recapitalization along with technology refresh and specific lab modernization efforts. These efforts will sustain, replace, upgrade, and modify hardware and software. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease achieved by negotiating Development Foundation Contract to a lower cost while deferring FY24 efforts to ramp up again in FY25.					
Title: Developmental Test (DT) ***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	17.850 -	20.372 -	19.069 -	0.000 -	19.069 -

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
supporting capabilities. The sites to be funded include but are not limited to NAWCAD Pax River, NAWCAD China Lake, and Edwards AFB. ***FY 2023 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 2024 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, 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. Funding will also procure Developmental Test (DT) Kits. Continuing to support flight test capacity and flight test execution. This includes first increment testing through initial and fully operational increments. The funding will be used for continuing to develop and test incrementally, for new software releases and deficiency fixes. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease is due to the decrease in TR-3 Developmental Test (DT) efforts in FY24.					
Title: Operational Test (OT)	8.542	9.891	15.760	0.000	15.760
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					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
program requirements include infrastructure, ranges, engineering, administration, logistics; maintenance, 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 2023 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 will also procure Developmental Test (DT) Kits. Funding also includes the execution of the remaining 64 OT virtual mission trials and IOT&E close out tasks. ***FY 2024 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, 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. The funding will be used for continual to development through incremental test of new software and deficiency fixes. Funding also includes the execution of the remaining 64 OT virtual mission trials and IOT&E close out tasks. AV is the TR-3 system owner responsible for verifying capability (per their funding in PU 2553) with data provided from DT and OT funded in this chart. ***FY 2024 OCO Plans:*** NA ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to ramp up of Follow-on Modernization Phase 2.3 Operational Test Kit support.					
Title: Future Flight Test Capabilities/Investments	46.490	48.451	52.774	0.000	52.774
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					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 2023 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 2024 Base Plans:*** Begin incremental funding for Flight Sciences Replacements jets FTI design, procurement and installation (1 per variant). Begin incremental funding for Flight Science Lite jets for FTI design in support of weapons testing (1xF-35B and 2xF-35C). 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 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase in funding due to continued ramp up of activities across the board, to include Lot 18/19 Flight Science, Flight					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Science Lite, Operational Test in support of TR-3 Flight Test Instrumentation and ramp up in JASSM-ER/LRASM and AARGM-ER flight test assets in FY24.					
Title: Ground Test and Simulation Infrastructure (GTSI)	6.112	6.576	3.464	0.000	3.464
Articles:	-	-	-	-	-
Description: Development of Ground Test & Simulation Infrastructure capabilities from Block 4/TR-3 and other C2D2 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 and/or Venue Developments will focus on the pure development of Block 4 capabilities through a Capability Verification Infrastructure that meets required 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 2023 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 2024 Base Plans: Continue Ground Test & Simulation Infrastructure improvements and modernization capabilities needed for Block 4 air system developments. 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,					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
and continue aircraft cyber improvements and testing efforts. Major Investments include improvements to Digital Capabilities and Analysis and Ground Integrated Battlespace Verification. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease due to fielding of some GT&S Developments for the Ground Test Infrastructure and other Developments. The GT&S Developments continue to be executed as planned for F-35 in FY25. This is subject to change in the future as advancements in Ground Test Infrastructure become available.					
Accomplishments/Planned Programs Subtotals	120.411	128.128	132.591	0.000	132.591

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The 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 2024 Navy		Date: March 2023
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 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	40.128	Nov 2021	40.985	Nov 2022	36.630	Nov 2023	-		36.630	184.640	302.383	302.383
OT - Prime LM Operational Test Aircraft Modification	C/CPIF	Lockheed Martion : Ft. Worth, TX	0.000	0.770	Jun 2022	1.800	Aug 2023	9.261	Aug 2024	-		9.261	8.941	20.772	20.772
FI - Prime LM DT AC Viability	C/CPIF	Lockheed Martion : Ft. Worth, TX	0.000	12.000	Dec 2021	12.938	Dec 2022	40.244	Dec 2023	-		40.244	17.414	82.596	82.596
FI - Flight Test Asset	C/CPFF	Lockheed Martion : Ft. Worth, TX	0.000	23.286	Dec 2021	25.490	Dec 2022	10.856	Dec 2023	-		10.856	22.741	82.373	82.373
DT- Prime LM Development Test Aircraft Modification	C/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	1.000	Mar 2022	4.275	Aug 2023	2.198	Aug 2024	-		2.198	9.941	17.414	17.414
Laboratory Developments	C/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		0.000		4.894	Nov 2023	-		4.894	0.000	4.894	4.894
		Subtotal	0.000	77.184		85.488		104.083		-		104.083	243.677	510.432	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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	MIPR	Edwards AFB : Edwards AFB, CA	0.000	8.630	Dec 2021	9.057	Dec 2022	7.938	Dec 2023	-		7.938	16.390	42.015	42.015

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	MIPR	IDT : Ballston, VA	0.000	0.410	Dec 2021	0.431	Dec 2022	0.764	Dec 2023	-		0.764	1.639	3.244	3.244
Developmental Test & Evaluation (DT&E)	MIPR	JHU : Lauren, MD	0.000	7.784	Dec 2021	8.195	Dec 2022	0.413	Dec 2023	-		0.413	23.355	39.747	39.747
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	0.000	5.189	Dec 2021	5.331	Dec 2022	7.890	Dec 2023	-		7.890	27.184	45.594	45.594
Developmental Test & Evaluation (DT&E)	WR	NAWCWD : China Lake, CA	0.000	9.793	Dec 2021	10.307	Dec 2022	0.664	Dec 2023	-		0.664	24.292	45.056	45.056
Operational Test & Evaluation (OT&E)	MIPR	Edwards AFB : Edwards AFB, CA	0.000	4.091	Dec 2021	2.750	Nov 2022	0.507	Nov 2023	-		0.507	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	MIPR	Eglin AFB : Eglin AFB, FL	0.000	6.033	Apr 2022	5.204	Jun 2023	0.635	Jun 2024	-		0.635	8.238	20.110	20.110
Operational Test & Evaluation (OT&E)	WR	NAWCAD : Patuxent River, MD	0.000	1.297	Dec 2021	1.365	Dec 2022	0.097	Dec 2023	-		0.097	5.519	8.278	8.278
Operational Test & Evaluation (OT&E)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		4.018	Dec 2023	-		4.018	0.000	4.018	4.018
Operational Test & Evaluation (OT&E)	MIPR	Nellis AFB : Nellis AFB, NV	0.000	0.000		0.000		4.955	Dec 2023	-		4.955	0.000	4.955	4.955
Operational Test & Evaluation (OT&E)	MIPR	NSMA : NSMA	0.000	0.000		0.000		0.627	Dec 2023	-		0.627	0.000	0.627	0.627
		Subtotal	0.000	43.227		42.640		28.508		-		28.508	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	120.411		128.128		132.591		-		132.591	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
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)*

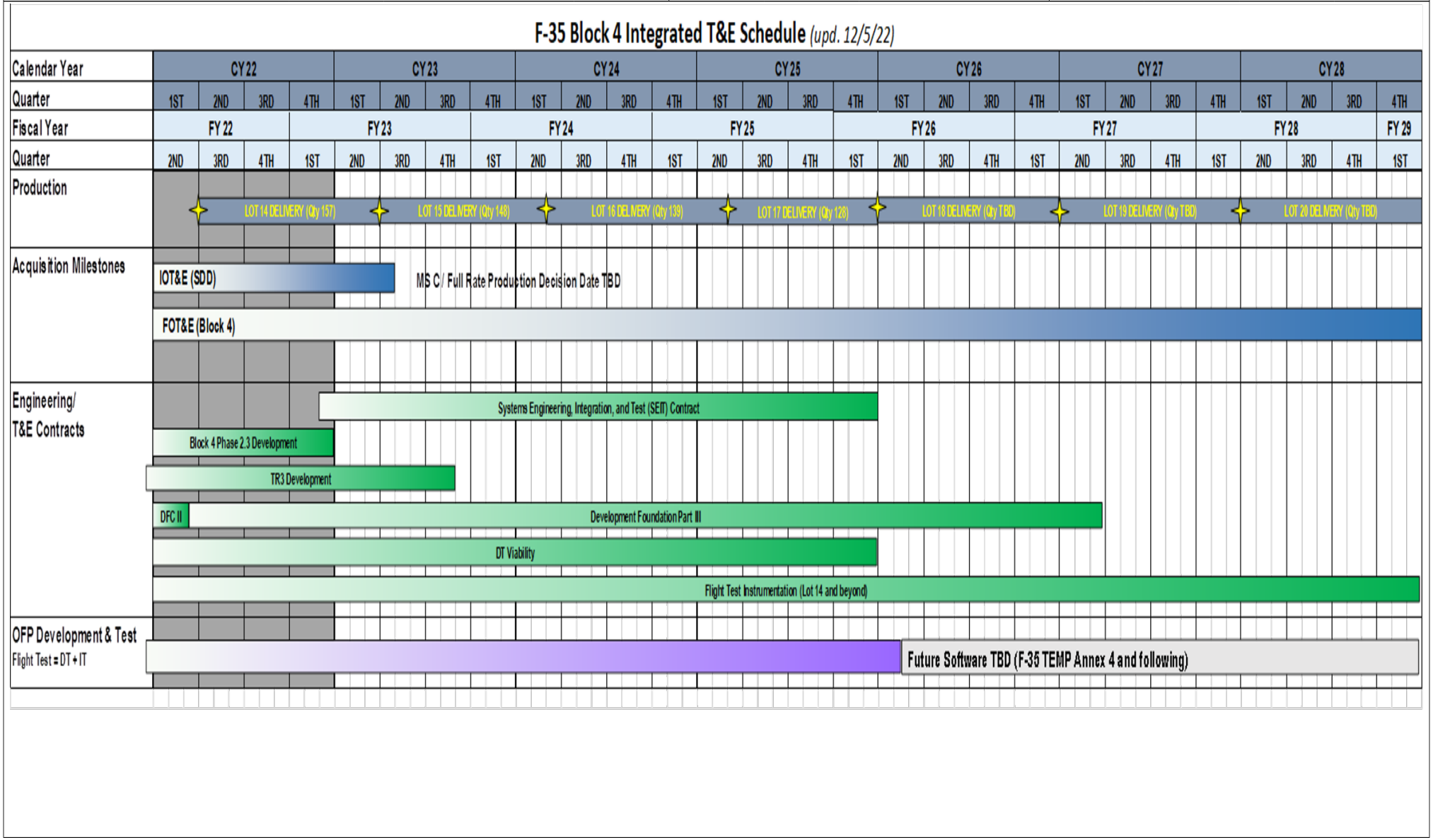


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2555 / *Test and Evaluation (T&E)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2555				
Development Foundation Contract Part III	1	2022	2	2027
DT Aircraft Viability	1	2022	1	2026
Flight Test Instrumentation	1	2022	4	2028
Systems Engineering, Integration, and Test Contract	1	2023	1	2026
OFP Development & Test	1	2022	2	2026

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
2556: *Propulsion (PP)*	0.000	14.547	7.415	65.769	-	65.769	62.896	45.594	74.570	29.306	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. This Project Unit includes continued efforts from Project Unit 3410 prior years. This Project Unit has been updated to reflect the directed project categories to provide traceability between current execution and future requests.

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 F-35 engine modernization, affordability drivers for top engine availability degraders, and improvement to support the F135 Propulsion System for the F-35 Air Vehicle. Testing and development of the three F-35 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 part of the wider Air System Modernization effort. Starting in FY24, Engine Modernization will be funded through the standard funding process. ECU Detailed Design labor will be added to the F135 Engine Enhancement contract in December 2024, and the rest of ECU EMD will be awarded in June 2024.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Propulsion (PP)	14.547	7.415	65.769	0.000	65.769
Articles:	-	-	-	-	-
Description: 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 F-35 engine modernization, affordability drivers for top engine availability degraders, and improvement to support the F135 Propulsion System for the F-35 Air Vehicle. Testing and development of the three F-35 aircraft variants require engine					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 part of the wider Air System Modernization effort. Starting in FY24, Engine Modernization will be funded through the standard funding process. ECU Detailed Design labor will be added to the F135 Engine Enhancement contract in December 2024, and the rest of ECU EMD will be awarded in June 2024.					
FY 2023 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 FY2027. 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 2024 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. Propulsion Flight Test Support enables the execution of F135 Air Vehicle Air System Playbook (ASP 16.1), and Technology Refresh 3 (TR3) Requirements. The Flight Test Fleet will maintain similar elevated aircraft inventory at twelve aircraft in FY2024. This includes seven at Edwards Air Force Base and five at Patuxent River Naval Air Base.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Flights and Engine Flight Hours (EFH) are expected to maintain their prior year levels at 240 flights and 480 flight hours per quarter. Flight Test Support efforts will transition to Organic support by FY2027. 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. FY2024 Propulsion C2D2 provides funding for requirements to support the Air Vehicle modernization efforts, Engine signature predicting improvement efforts, and continuing F135 Engine Modernization/Propulsion System Upgrade developmental efforts. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase from FY2023 to FY2024 due to Air Vehicle modernization efforts and continuing F135 Engine Modernization/Propulsion System Upgrade developmental efforts. FY24 Budget includes first year of EMD program for ECU, greatly increasing development funding in FY24.					
Accomplishments/Planned Programs Subtotals	14.547	7.415	65.769	0.000	65.769

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 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 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	5.870	Nov 2021	0.500	Nov 2022	0.000		-		0.000	0.000	6.370	6.370
PP Prime PW C2D2 Propulsion Flight Test	C/CPIF	Pratt & Whitney : East Hartford, Connecticut	0.000	6.767	Oct 2021	5.884	Oct 2022	7.340	Oct 2023	-		7.340	5.464	25.455	25.455
PP DevSecOps Emulation Lab	C/CPIF	Pratt & Whitney : East Hartford, Connecticut	0.000	1.229	Oct 2021	0.000		0.000		-		0.000	0.000	1.229	1.229
PP F135 Engine Modernization Development	Various	Various : Various	0.000	0.578	Oct 2021	0.736	Oct 2022	6.259	Jun 2024	-		6.259	0.000	7.573	7.573
PP F135 Engine Modernization Detailed Design	C/CPFF	Pratt & Whitney : East Hartford, Connecticut	0.000	0.000		0.000		50.000	Dec 2023	-		50.000	0.000	50.000	50.000
		Subtotal	0.000	14.444		7.120		63.599		-		63.599	5.464	90.627	N/A

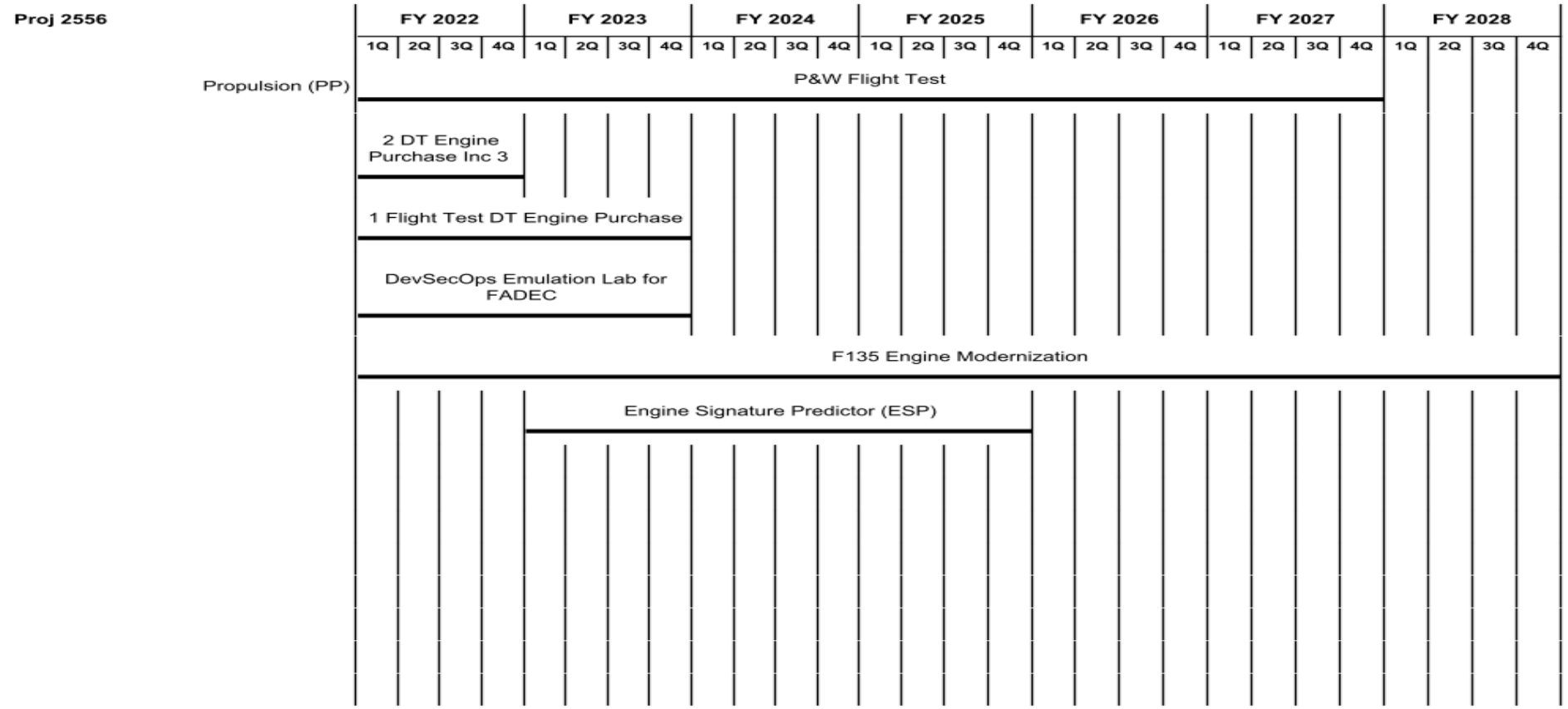
Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PP Program Management Support	Various	Various : Various	0.000	0.103	Nov 2021	0.295	Nov 2022	2.170	Jan 2024	-		2.170	Continuing	Continuing	Continuing
		Subtotal	0.000	0.103		0.295		2.170		-		2.170	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	14.547		7.415		65.769		-		65.769	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2556 / *Propulsion (PP)*



2024DON - 0604840N - 2556

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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	4	2027
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	2023
Propulsion (PP): F135 Engine Modernization	1	2022	4	2028
Propulsion (PP): Engine Signature Predictor (ESP)	1	2023	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
2557: *Maintenance Systems (MxS)*	0.000	22.267	25.090	18.061	-	18.061	19.038	15.909	14.896	14.650	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 FY2024 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Operational Data Integrated Network (ODIN)	21.317	24.590	18.061	0.000	18.061
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.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 2023 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 DataOps. Efforts will continue in cybersecurity survivability and development of user-focused training. Execute efforts continuing to modernize current logistics applications where applicable. ***FY 2024 Base Plans:*** Complete ALIS to ODIN software containerization efforts and development of foundational infrastructure for software and data modernization to increase user capability. Continue development of the Linux platform and ODIN data architecture. Finalize current generation hardware update. Continue analysis of alternatives on next-generational hardware tech insertion supporting ODIN development and test plan as well as capability requirements that are not currently encompassed in the baseline equipment. Optimize the ODIN cloud-based infrastructure while continuing migration and modernization of the ODIN enterprise. Leverage the establishment of modern software architecture from Unclassified development efforts to develop and release the Classified portion of the F-35 Maintenance Systems ODIN enterprise. Develop and deploy improved capabilities to replace legacy applications. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
The decrease from FY2023 to FY2024 is due to a periodic ramp down in hardware development as requirements are finalized following FY2023 current generation hardware development efforts.					
Title: Prognostics and Health Management (PHM) ***Articles:***	0.950 -	0.500 -	0.000 -	0.000 -	0.000 -
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 2023 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 2024 Base Plans:*** N/A ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease from FY2023 to FY2024 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. Final 3 algorithms began development in FY2022 and were completed in FY2023.					
Accomplishments/Planned Programs Subtotals	22.267	25.090	18.061	0.000	18.061

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MxS Prime LM ODIN	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	15.209	Nov 2021	12.281	Nov 2022	8.601	Nov 2023	-		8.601	43.519	79.610	79.610
MxS Prime PW ODIN	C/CPFF	Pratt Whitney : East Hartford, Connecticut	0.000	0.985	Nov 2021	2.466	Nov 2022	1.900	Nov 2023	-		1.900	0.566	5.917	5.917
MxS Prime LM PHM	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.950	Nov 2021	0.500	Nov 2022	0.000		-		0.000	0.000	1.450	1.450
		Subtotal	0.000	17.144		15.247		10.501		-		10.501	44.085	86.977	N/A

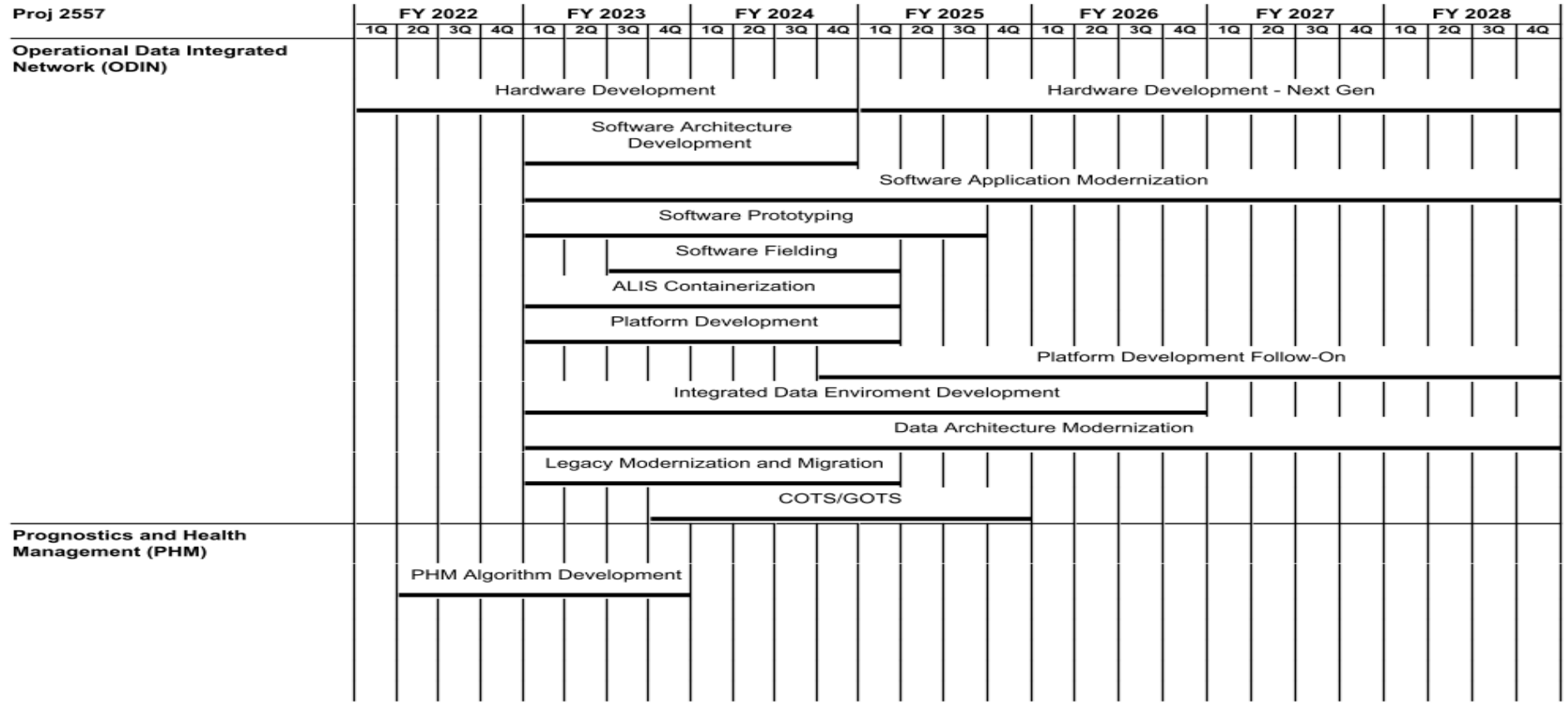
Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MxS ODIN Development Support	Various	Various : Various	0.000	5.123	Nov 2021	9.843	Nov 2022	7.560	Nov 2023	-		7.560	Continuing	Continuing	Continuing
		Subtotal	0.000	5.123		9.843		7.560		-		7.560	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	22.267		25.090		18.061		-		18.061	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2557 / *Maintenance Systems (MxS)*



2024PB - 0604840N - 2557

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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 Development - Next Gen	1	2025	4	2028
Operational Data Integrated Network (ODIN): Software Architecture Development	1	2023	4	2024
Operational Data Integrated Network (ODIN): Software Application Modernization	1	2023	4	2028
Operational Data Integrated Network (ODIN): Software Prototyping	1	2023	3	2025
Operational Data Integrated Network (ODIN): Software Fielding	3	2023	1	2025
Operational Data Integrated Network (ODIN): ALIS Containerization	1	2023	1	2025
Operational Data Integrated Network (ODIN): Platform Development	1	2023	1	2025
Operational Data Integrated Network (ODIN): Platform Development Follow-On	4	2024	4	2028
Operational Data Integrated Network (ODIN): Integrated Data Environment Development	1	2023	4	2026
Operational Data Integrated Network (ODIN): Data Architecture Modernization	1	2023	4	2028
Operational Data Integrated Network (ODIN): Legacy Modernization and Migration	1	2023	1	2025
Operational Data Integrated Network (ODIN): COTS/GOTS Application Configuration, Software Development, and Integration	4	2023	4	2025
Prognostics and Health Management (PHM): PHM Algorithm Development	2	2022	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
2558: *Combat Data Systems (CDS)*	0.000	20.365	26.334	17.707	-	17.707	16.190	9.848	19.409	9.356	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 FY2024 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Joint Reprogramming Environment (JRE)	12.060	19.606	12.712	0.000	12.712
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 2023 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					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 2024 Base Plans:*** Complete 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. Continue software coding and testing to support development / deployment of the software tools. Continue 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 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. Continue efforts on the Advanced Development, Integration & Test contract to integrate Block 4 software data loads at reprogramming laboratories. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease due to completion of efforts associated with Government Systems Engineering and Testing, specifically the Partner Analysis Laboratory Operations, Lab Based Security Assessment, Baseline Performance Measurement.					
Title: Mission Planning Support Environment (MPSE)	8.305	6.728	4.995	0.000	4.995
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.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Other costs support Technology Investment for key Modernization/Innovation activities and Cloud based DevSecOps infrastructure.					
FY 2023 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 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 2024 Base Plans: Continue development support for 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. 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. Continue 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 2024 OCO Plans: N/A					
FY 2023 to FY 2024 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Decrease due to completion of efforts associated with Government Systems Engineering and Testing, specifically the Partner Analysis Laboratory Operations, Lab Based Security Assessment, Baseline Performance Measurement.					
Accomplishments/Planned Programs Subtotals	20.365	26.334	17.707	0.000	17.707

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Combat Data Systems Program Management Office (CDS PMO) continues to develop JRE and MPSE requirements by leveraging existing F-35 Joint Program Office contracts, use of Other Government Contracts, and by developing and competing new contract actions for unique CDS PMO requirements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 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	3.450	Oct 2021	6.390	Dec 2022	3.451	Dec 2023	-		3.451	64.083	77.374	77.374
CDS Prime JRE Development - RVVS	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000	Oct 2022	7.141	Dec 2022	4.092	Dec 2023	-		4.092	102.150	113.383	113.383
CDS Prime JRE Development - CURC	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	1.985	Oct 2021	0.000		0.000		-		0.000	0.000	1.985	1.985
CDS Prime JRE Development - TR-3	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	1.083	Oct 2021	0.371	Mar 2023	0.000		-		0.000	0.000	1.454	1.454
CDS Prime JRE Development - SEIT	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		1.444	Jul 2023	3.449	Jul 2024	-		3.449	48.300	53.193	53.193
CDS Prime JRE Development - FRL	MIPR	Pt. Magu, CA : Pt. Magu, CA	0.000	0.000		0.469	Jan 2023	0.000	Jan 2024	-		0.000	0.000	0.469	0.469
CDS Prime JRE Development - Capability Development	MIPR	Eglin AFB, FL : Eglin AFB, FL	0.000	1.050	Dec 2021	3.420	Dec 2022	0.890	Dec 2023	-		0.890	0.000	5.360	5.360
CDS Prime MPSE Development F-35 Next Gen Mission Planning	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	5.965	Mar 2023	1.961	Mar 2023	1.961	Mar 2024	-		1.961	17.600	27.487	27.487
CDS Prime MPSE Development - Capability Development	MIPR	Eglin AFB, FL : Eglin AFB, FL	0.000	0.000		2.954	Dec 2022	2.507	Dec 2023	-		2.507	0.000	5.461	5.461
		Subtotal	0.000	13.533		24.150		16.350		-		16.350	232.133	286.166	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDS JRE Development Support	MIPR	Eglin AFB, FL : Eglin AFB, FL	0.000	4.492	Dec 2021	0.471	Dec 2022	0.830	Dec 2023	-		0.830	Continuing	Continuing	Continuing
CDS MPSE Development Support	MIPR	Eglin AFB, FL : Eglin AFB, FL	0.000	2.340	Dec 2021	1.713	Dec 2022	0.527	Dec 2023	-		0.527	Continuing	Continuing	Continuing
		Subtotal	0.000	6.832		2.184		1.357		-		1.357	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
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 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	20.365		26.334		17.707		-		17.707	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
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 Data Systems
Development Roadmap – Joint Reprogramming Environment

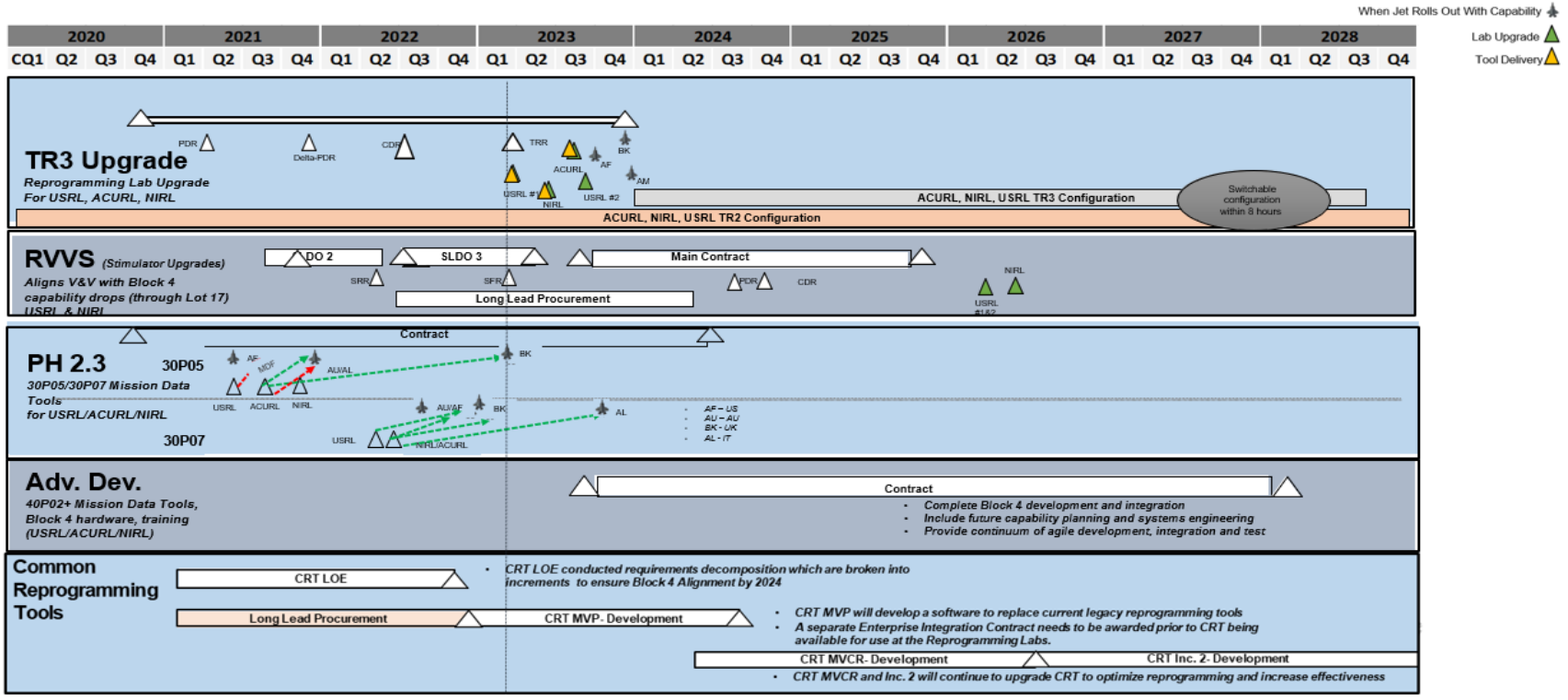


Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

F-35 Combat Data Systems
Development Roadmap – Mission Programming Enterprise (MPE)

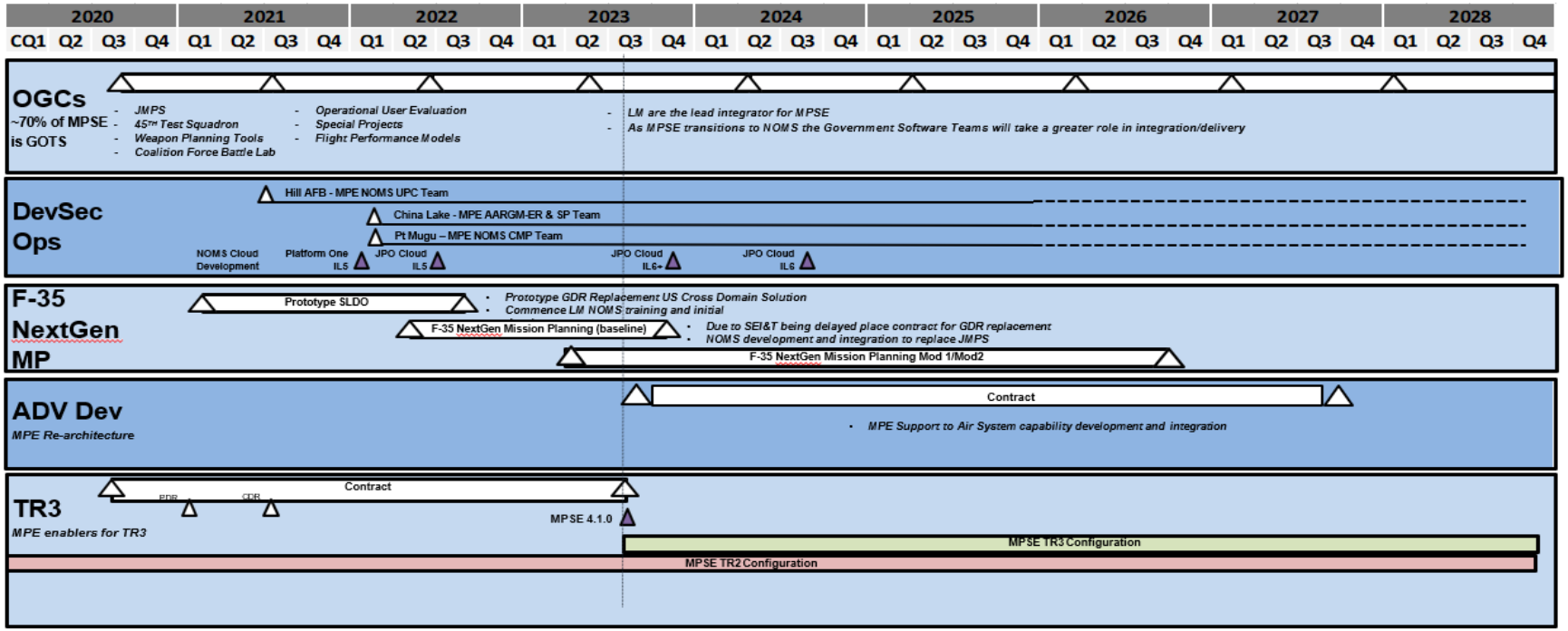


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

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	2028
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	2028
Mission Planning Support Environment (MPSE): TR-3/Enablers for TR-3 - MPSE TR3 Configuration	1	2023	4	2028
Mission Planning Support Environment (MPSE): MPSE Re-architecture - Contract	3	2023	4	2028
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 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2558 / *Combat Data Systems (CDS)*

	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	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2559: *Training Systems and Simulation (TSS)*	0.000	38.761	36.995	30.151	-	30.151	32.221	31.529	33.479	31.382	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 FY2024 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: Development efforts will continue to focus on modernization of activities outlined in the TSS PMO roadmaps that will target the requirement of bringing higher fidelity training to the warfighter. Specific development and testing efforts focus on software architecture modernization, hardware architecture modernization, and Synthetic Threat Enhancement.

Joint Simulation Environment (JSE) Development: Development and testing 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 for F-35 Block 4 modernization. Efforts will include FIAB development, model fidelity and capability upgrades for existing threats/sensors/weapons, development of new threat/sensor/weapon models, and environment 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 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Training Systems Capability Development (TSCD)	19.599	20.155	15.500	0.000	15.500
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 2023 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 2024 Base 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 relevant capability upgrades (Pilot Training, Maintainer Training, Instructional Products) for release to the fleet in FY2024. Additionally, the Production RunTime Server (PRTS) will continue critical development, integration and test activities required to enable TR-3 training capabilities. The Distributed Mission Trainer (DMT) Program will continue with development activities to ensure DMT can support the CI1-3 capabilities to be leveraged via US networks 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 Live-Virtual-Constructive (LVC) portfolio, requirements derivation and planning actives for Enhanced Embedded Training and TCTS II integration will continue to evolve to support the US Service's LVC integrated					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
training environment. Training System lab infrastructure assets will be configured to enable current and future Training System development activities 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 was aligned to the Training System Capability Development (TSCD) R-2A category beginning in FY23. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease from FY2023 to FY2024 is a result of the delayed Training System transition from TR-2 to TR-3. Because of delays with the Training System hardware and software architecture modernization that is required to field TR-3 OFPs, and because the initial TR-3 OFPs are rehosts of TR-2 capabilities, the Training System is not delivering a new software load to support the inital TR-3 series OFPs. The Training System will again align to the Air Vehicle in Lot 17.					
Title: Training Systems Investments (TSI) Roadmap	9.584	6.935	6.250	0.000	6.250
Articles:	-	-	-	-	-
Description: Development efforts will continue to focus on modernization of activities outlined in the TSS PMO roadmaps that will target the requirement of bringing higher fidelity training to the warfighter. Specific development and testing efforts focus on software architecture modernization, hardware architecture modernization, and Synthetic Threat Enhancement. ***FY 2023 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					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
assets will be configured to enable current and future Training System development activities across the portfolio. ***FY 2024 Base Plans:*** Efforts will continue to support analysis, design, 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 relevant capability upgrades (Pilot Training, Maintainer Training, Instructional Products) for release to the fleet in FY24. Additionally, F-35 Lightning Integrated Training Environment (FLITE) will continue critical development, integration and test activities with the first delivery expected in FY26. The Distributed Mission Training (DMT) Program will continue with development activities to ensure DMT can support the CI1-3 capabilities to be leveraged via US networks 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. DMT will ensure the connection of F-35 Pilot Training Devices (PTDs) to customer provided and accredited Wide Area Networks (WAN) to facilitate connecting multiple sites and enabling a virtual training environment in a common synthetic environment for the US Services. Within the Live-Virtual-Constructed (LVC) portfolio, requirements derivation and planning actives for Enhanced Embedded Training and TCTS II integration will continue to evolve to support the US LVC integrated training environment. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease from FY23 to FY24 is primarily attributable to delays in the integration efforts of Joint Simulation Environment components, specifically Next Generation Threat System (NGTS), into the exportable Program of Record (PoR) Pilot Training Device (PTD).					
Title: Joint Simulation Environment (JSE) Development	9.578	9.905	8.401	0.000	8.401
Articles:	-	-	-	-	-
Description: Development and testing 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 for F-35 Block 4 modernization. Efforts will include FIAB development, model fidelity and capability upgrades for existing threats/sensors/weapons, development of new threat/sensor/weapon					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
models, and environment 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 2023 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 2024 Base Plans:*** Efforts will include modernization of F-35 In-A-Box (FIAB) software development and integration, model fidelity and capability upgrades for exisitng threats/sensors/weapon models, development of new threat/sensor/weapon models, and environment 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 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease from FY23 to FY24 is primarily attributable to on-going FIAB Block 4 development, integration activities and development of new threats/ weapons models being extended due to contractor manpower constraints, the restructure of JPO contracts and the continuation of FIAB data rights litigation and licensing issues preventing documentation and software deliveries.					
Accomplishments/Planned Programs Subtotals	38.761	36.995	30.151	0.000	30.151

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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)*

via a combination of training specific CLINs in Enterprise-level contracts, TSS PMO specific contract actions and Other Transaction 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 2024 Navy		Date: March 2023
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS Prime LM Training System Alignment (TSCD)	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	7.912	Nov 2021	7.750	Nov 2022	5.960	Nov 2023	-		5.960	65.360	86.982	86.892
TSS Prime LM PTD TR-3 Development (TSCD)	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	7.456	Nov 2021	6.225	Nov 2022	4.787	Nov 2023	-		4.787	33.680	52.148	52.148
TSS TSS Prime LM Training Lab Infrastructure (TSCD)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	4.376	Nov 2021	4.755	Nov 2022	3.657	Nov 2023	-		3.657	28.764	41.552	41.552
TSS Live-Virtual-Constructive (LVC) - DMT (TSCD)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.624	Nov 2021	0.625	Nov 2022	0.481	Nov 2023	-		0.481	16.587	18.317	18.317
TSS Effects Based Simulation Development (TSCD)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.800	Nov 2022	0.615	Nov 2023	-		0.615	7.114	8.529	8.529
TSS Hardware Re-architecture (TSI)	MIPR	DTIC : Fort Belvoir, VA	0.000	3.619	Nov 2021	3.215	Nov 2022	2.897	Nov 2023	-		2.897	3.675	13.406	13.406
TSS Software Re-architecture (TSI)	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	2.968	Nov 2021	2.610	Nov 2022	2.353	Nov 2023	-		2.353	17.888	25.819	25.819
TSS Synthetic Threat Enhancement (TSI)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	1.247	Nov 2021	1.110	Nov 2022	1.000	Nov 2023	-		1.000	6.107	9.464	9.464
TSS Prime LM FIAB Development (JSE)	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	5.034	Nov 2021	4.857	Nov 2022	4.120	Nov 2023	-		4.120	18.775	32.786	32.786
		Subtotal	0.000	33.236		31.947		25.870		-		25.870	197.950	289.003	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS Pax Development Support (JSE)	WR	NAWCAD : Patuxent River, MD	0.000	4.349	Nov 2021	4.108	Nov 2022	3.484	Nov 2023	-		3.484	17.993	29.934	29.934
TSS Other Development Support (JSE)	Various	Various : Various	0.000	0.409	Nov 2021	0.940	Nov 2022	0.797	Nov 2023	-		0.797	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS EBS Development Support (JSE)	Various	Various : Various	0.000	0.767	Nov 2021	0.000		0.000		-		0.000	0.000	0.767	Continuing
		Subtotal	0.000	5.525		5.048		4.281		-		4.281	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	38.761		36.995		30.151		-		30.151	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
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)*

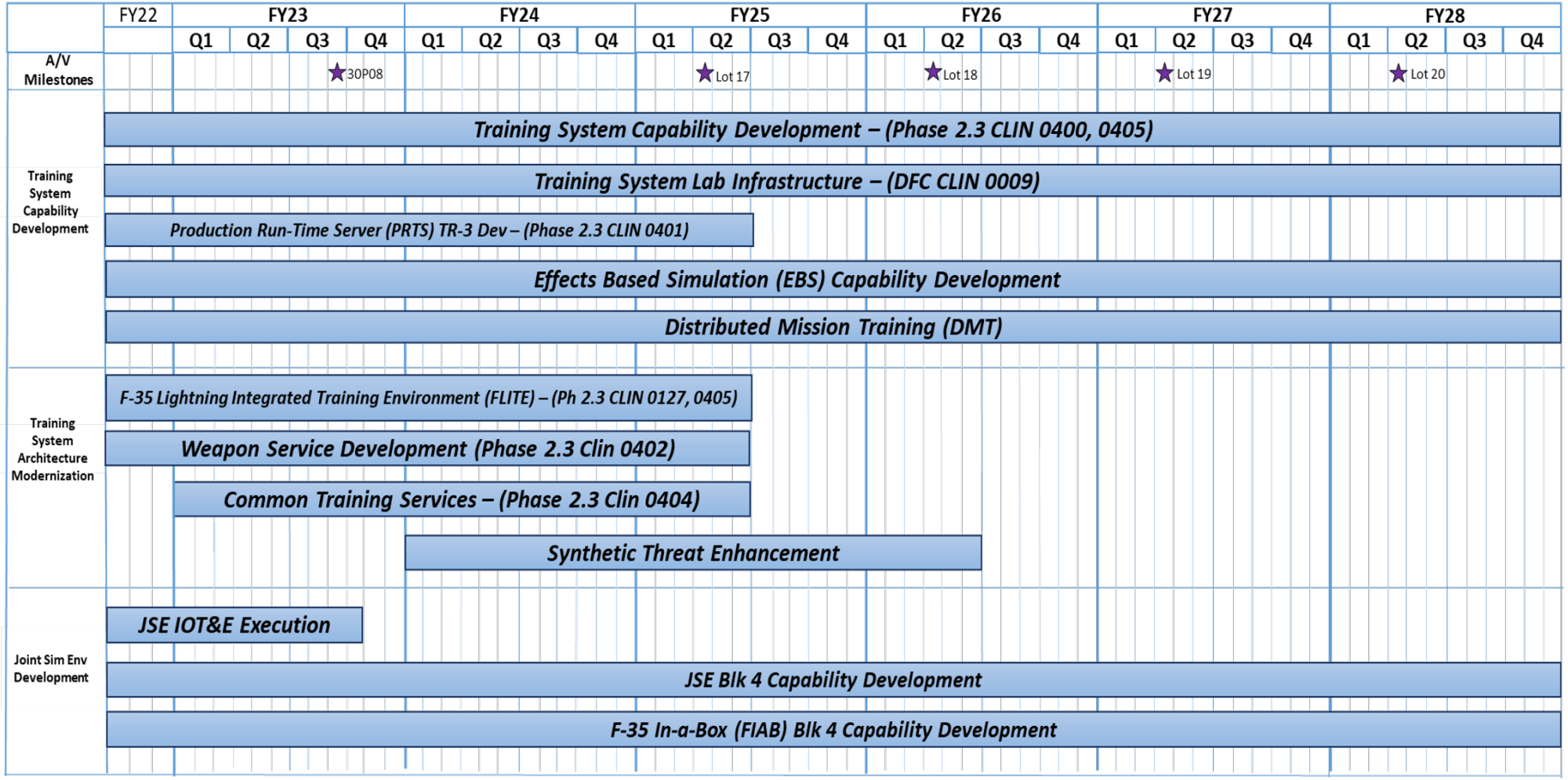


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2559 / *Training Systems and Simulation (TSS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2559				
Training Systems and Simulation (TSS): Training System Capability Development	1	2022	4	2028
Training Systems and Simulation (TSS): Training System Lab Infrastructure	1	2022	4	2028
Training Systems and Simulation (TSS): Production Run-Time Server (PRTS) TR-3 Development	1	2022	3	2025
Training Systems and Simulation (TSS): Effects Based Simulation (EBS) Capability Development	1	2022	4	2028
Training Systems and Simulation (TSS): Distributed Mission Training (DMT)	1	2022	4	2028
Training Systems and Simulation (TSS): F-35 Lightning Integrated Training Environment (FLITE)	1	2022	3	2025
Training Systems and Simulation (TSS): Weapon Service Development	1	2022	3	2025
Training Systems and Simulation (TSS): Common Training Services	1	2023	3	2025
Training Systems and Simulation (TSS): Synthetic Threat Environment	1	2024	3	2026
Training Systems and Simulation (TSS): Joint Simulation Environment, Capability Development & Air System Alignment	1	2022	4	2028
Training Systems and Simulation (TSS): JSE IOT&E Execution	1	2022	4	2023
Training Systems and Simulation (TSS): JSE Block 4 Capability Development	1	2022	4	2028
Training Systems and Simulation (TSS): F-35 In-A-Box (FIAB) Block 4 Capability Development	4	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2560: *Infrastructure and Support Costs*	0.000	2.425	2.616	2.675	-	2.675	2.724	3.071	3.164	2.874	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 FY2024 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 C2D2 development efforts.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Core Program Support/CSS Support	2.425	2.616	2.675	0.000	2.675
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 to C2D2 development efforts.					
FY 2023 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 2024 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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 to C2D2 development efforts. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase from FY2023 to FY2024 due to price adjustments and inflation.					
Accomplishments/Planned Programs Subtotals	2.425	2.616	2.675	0.000	2.675

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Core Program Support Cyber Risk Reduction	Various	Various : Various	0.000	0.500	Dec 2021	0.500	Dec 2022	0.500	Dec 2023	-		0.500	Continuing	Continuing	Continuing
Core Program Support Model-Based Systems Engineering	Various	IBM : Arlington, VA	0.000	0.100	Dec 2021	0.100	Dec 2022	0.150	Feb 2024	-		0.150	Continuing	Continuing	Continuing
Core Program Support Air Worthiness Support and Cyber Safe Support	C/FFP	DTIC : Fort Belvoir, VA	0.000	0.000		0.674	Dec 2022	0.600	Feb 2024	-		0.600	Continuing	Continuing	Continuing
		Subtotal	0.000	0.600		1.274		1.250		-		1.250	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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSS Support/Civ Support	Various	Various : Various	0.000	1.550	Dec 2021	1.000	Dec 2022	1.127	Dec 2023	-		1.127	Continuing	Continuing	Continuing
Core Program Support Off-Base Leases	MIPR	WHS : NCR	0.000	0.090	Oct 2021	0.092	Oct 2022	0.000		-		0.000	0.000	0.182	0.182
Core Program Support Travel	Various	Various : Various	0.000	0.185	Oct 2021	0.250	Oct 2022	0.298	Oct 2023	-		0.298	Continuing	Continuing	Continuing
		Subtotal	0.000	1.825		1.342		1.425		-		1.425	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	2.425		2.616		2.675		-		2.675	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2560 / *Infrastructure and Support Costs*

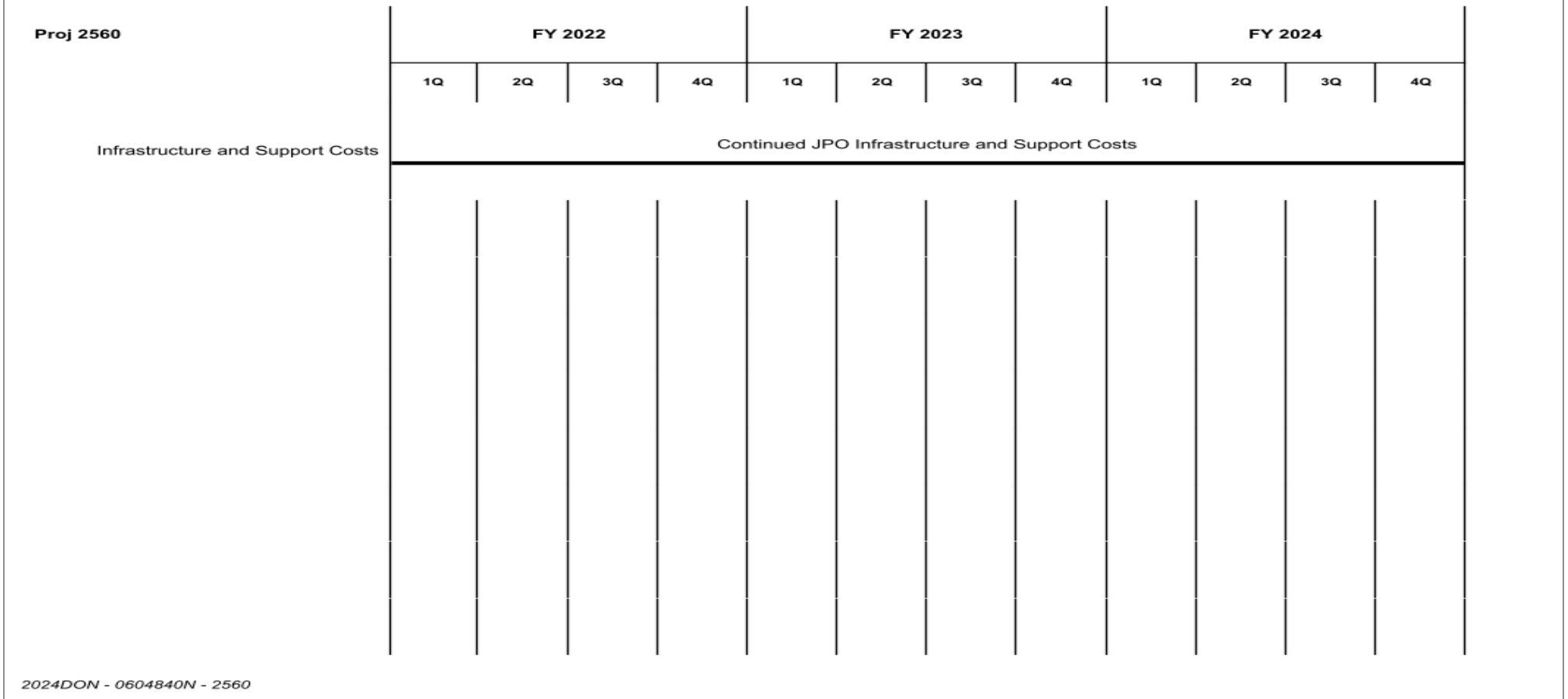


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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2560 / *Infrastructure and Support Costs*

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	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2561: *DevSecOps*	0.000	13.578	10.032	8.367	-	8.367	12.272	12.369	1.487	17.612	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) and Directorates. This includes providing support to the Combat Data Systems (CDS), Air Vehicle (AV), Maintenance Systems (MxSYS), Propulsion, Training Systems and Simulation (TSS) PMOs, and Directorate of Engineering. The mission of DevSecOps is to provide a centralized F-35 Data repository, a consolidated F-35 software development environment, and support for system development lifecycle (SDLC) of the F-35 platform, allowing for rapid release cycles to keep the F-35 ahead of its adversaries. Investment in, and modernization of, DevSecOps include efforts to support F-35 Software modernization efforts, develop organic government software capabilities, support SDLC and flight testing capabilities, enhance the security posture of the software 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: DevSecOps Support	13.578	10.032	8.367	0.000	8.367
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) and Directorates. This includes providing support to the Combat Data Systems (CDS), Air Vehicle (AV), Maintenance Systems (MxSYS), Propulsion, Training Systems and Simulation (TSS) PMOs, and Directorate of Engineering. The mission of DevSecOps is to provide a centralized F-35 Data repository, a consolidated F-35 software development environment, and support for system development lifecycle (SDLC) of the F-35 platform, allowing for rapid release cycles to keep the F-35 ahead of its adversaries. Investment in, and modernization of, DevSecOps include efforts to support F-35 Software modernization efforts, develop organic government software capabilities, support SDLC and flight testing capabilities, enhance the security posture of the software development pipeline, and support goals of					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
reducing long-term on-premise infrastructure environments cost, ultimately resulting in reducing fleet delivery timelines. ***FY 2023 Plans:*** Mature DevSecOps environment into an operational platform for F-35 Software Development supporting US Government, contracted and partner nation applications plus Project Management Offices (PMO) software application development, model based system engineering. Continue transition of PMOs into centralized JPO-managed cloud environment. Continue obtaining appropriate software Cloud development environment, talent, licensing and tools. Maintain Cloud, talent and consumption contracts. Continue meeting cyber security requirements. Develop continuous Authority to Operate (cATO) DevSecOps pipeline and tools to meet compliance requirements and software modernization initiatives for all DevSecOps environments. ***FY 2024 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 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 2024 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease from FY23 to FY24 is primarily attributable to a USN/USMC mark due to a lag in expenditure actuals.					
Accomplishments/Planned Programs Subtotals	13.578	10.032	8.367	0.000	8.367

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 Return on Investment (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. 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 2024 Navy			Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DevSecOps Development Support - Talent	C/FFP	Various : Various	0.000	6.000	Dec 2021	5.107	Dec 2022	3.367	Jan 2024	-		3.367	Continuing	Continuing	Continuing
DevSecOps Development Support - Licenses	C/FFP	August Schell Enterprises, Inc. : Rockville, MD	0.000	4.000	Oct 2021	2.625	Dec 2022	2.200	Jun 2024	-		2.200	Continuing	Continuing	Continuing
DevSecOps Development Support - Cloud Support	C/FFP	Amazon Web Services, Inc. : Seattle, WA	0.000	3.578	Oct 2021	1.425	Dec 2022	1.400	Dec 2023	-		1.400	Continuing	Continuing	Continuing
DevSecOps Development Support - Industry Stand-up	C/FFP	Various : Various	0.000	0.000		0.875	Dec 2022	1.400	Mar 2024	-		1.400	Continuing	Continuing	Continuing
		Subtotal	0.000	13.578		10.032		8.367		-		8.367	Continuing	Continuing	N/A

Remarks

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

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	13.578		10.032		8.367		-		8.367	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2561 / *DevSecOps*

F-35 JPO DevSecOps Roadmaps

Schedule Details	Start		End		FY22				FY23				FY24				FY25				FY26				FY27			
Events by Sub Project	Quarter	Year	Quarter	Year	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Production Milestones																												
Contract Award: DevSecOps Infrastructure/Platform/Tools	Q4	FY21	Q2	FY26																								
Contract Award: DevSecOps FENCES	Q4	FY21	Q2	FY26																								
Contract Award: DevSecOps Cloud	Q1	FY22	Q2	FY26																								
Contract Award: DevSecOps Industry Standup	Q4	FY23	Q4	FY28																								
System Development																												
AWS Impact Level 2 Research, Development and Test	Q4	FY20	Q3	FY23																								
AWS Impact Level 5 Buildout	Q1	FY20	Q1	FY22																								
AWS Impact Level 5 Research, Development and Test	Q4	FY21	N/A	N/A																								
AWS Impact Level 6 Buildout	Q4	FY23	Q3	FY25																								
AWS Impact Level 6 Research, Development and Test	Q3	FY24	N/A	N/A																								
AWS Impact Level 6+ (SAP) Buildout	Q4	FY22	Q2	FY24																								
AWS Impact Level 6+ (SAP) Research, Development and Test	Q3	FY23	N/A	N/A																								
Data Transfer as a Service Buildout	Q2	FY21	Q2	FY23																								
Data Transfer as a Service Research, Development and Test	Q1	FY23	N/A	N/A																								
Cloud Gateway (Collateral) LM Connection	Q1	FY25	Q3	FY25																								
Cloud Gateway (Collateral) Research, Development and Test	Q2	FY25	N/A	N/A																								
Cloud Gateway (SAP) LM Connection	Q3	FY21	Q1	FY24																								
Cloud Gateway (SAP) Research, Development and Test	Q4	FY23	N/A	N/A																								

Updated: 2/22/2024

RDT&E Development with customer requirements

RDT&E Initial Development

Key:

Contract Award and/or Option Exercised

Initial Operational Capability

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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 2 Research, Development and Test	1	2022	3	2023
System Development: AWS Impact Level 5 Buildout	1	2022	1	2022
System Development: AWS Impact Level 5 Research, Development and Test	1	2022	1	2022
System Development: AWS Impact Level 6 Buildout	4	2023	3	2025
System Development: AWS Impact Level 6 Research, Development and Test	3	2024	3	2024
System Development: AWS Impact Level 6+ (SAP) Buildout	4	2022	2	2024
System Development: AWS Impact Level 6+ (SAP) Research, Development and Test	2	2023	2	2023
System Development: Data Transfer as a Service Buildout	1	2022	2	2023
System Development: Data Transfer as a Service Research, Development and Test	1	2023	1	2023
System Development: Cloud Gateway (Collateral) LM Connection	1	2025	3	2025
System Development: Cloud Gateway (Collateral) Research, Development and Test	2	2025	2	2025
System Development: Cloud Gateway (SAP) LM Connection	1	2022	1	2024
System Development: Cloud Gateway (SAP) Research, Development and Test	4	2023	4	2023
Production Milestones: DevSecOps Infrastructure/Platform/Tools	1	2022	2	2026
Production Milestones: DevSecOps FENCES	1	2022	2	2026
Production Milestones: DevSecOps Cloud	1	2022	2	2026
Production Milestones: DevSecOps Industry Standup	4	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2562: *F-35 USN Unique*	0.000	8.303	16.533	14.668	-	14.668	19.788	16.655	15.726	16.042	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 FY2024 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: USN Unique	8.303	16.533	14.668	0.000	14.668
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 2023 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, as well as USN systems engineering efforts and other emerging USN requirements.					
FY 2024 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					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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, as well as USN systems engineering efforts and other emerging USN requirements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The decrease from FY2023 to FY2024 is due to a lag in expenditure actuals.					
Accomplishments/Planned Programs Subtotals	8.303	16.533	14.668	0.000	14.668

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 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2562 / *F-35 USN Unique*	

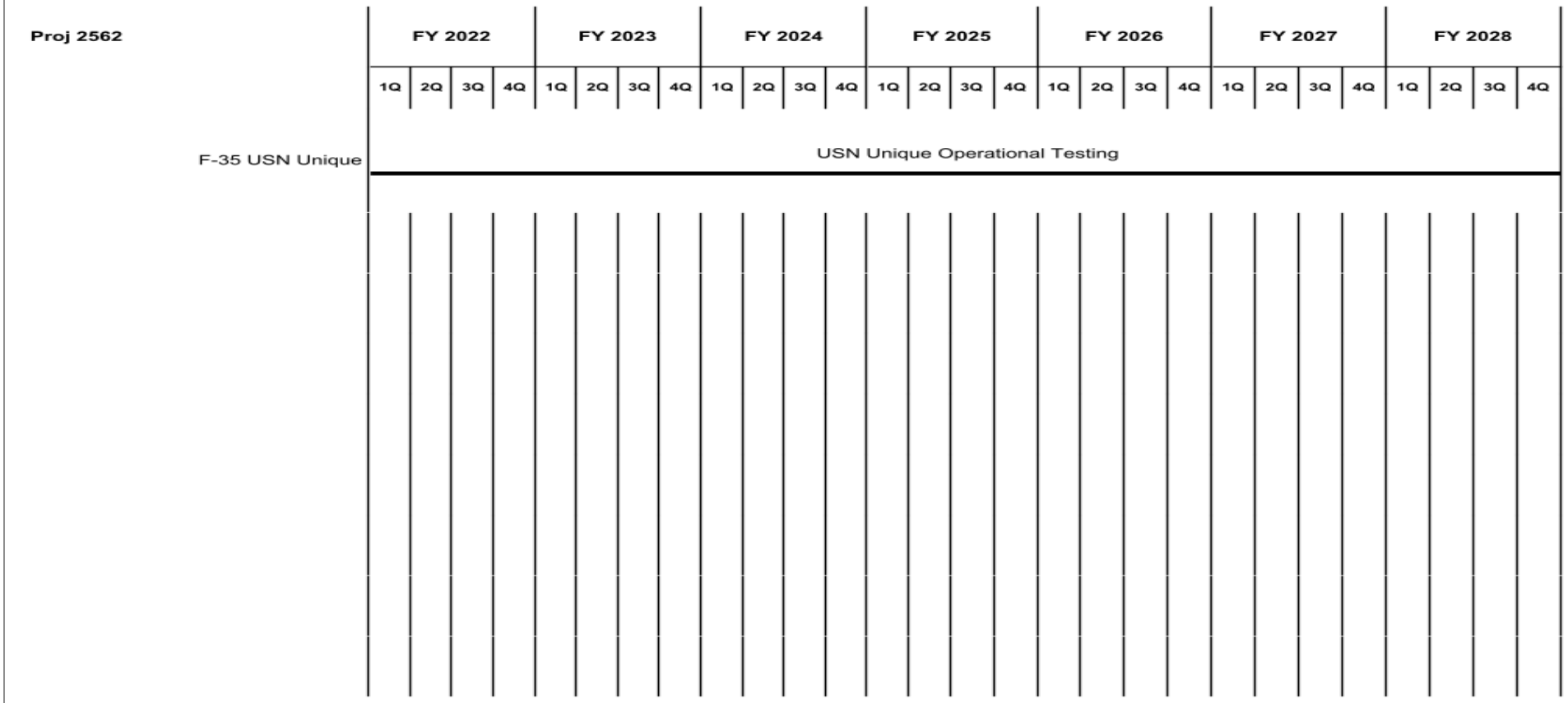
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation (OT&E)	Various	Various : Various	0.000	8.303	Dec 2021	16.533	Dec 2022	14.668	Dec 2023	-		14.668	Continuing	Continuing	Continuing
		Subtotal	0.000	8.303		16.533		14.668		-		14.668	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	8.303		16.533		14.668		-		14.668	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2562 / *F-35 USN Unique*



2024DON - 0604840N - 2562

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
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 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
9999: *Congressional Adds*	0.000	4.827	23.750	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	28.577
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 2022	FY 2023
Congressional Add: Joint Enterprise Data Interoperability for F-35 Depots ***FY 2022 Accomplishments:*** Commence development for Joint enterprise data interoperability for F-35 depots needed to support the Block 4 capability improvement. ***FY 2023 Plans:*** N/A	4.827	5.000
Congressional Add: F135 Engine Enhancement ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** N/A	0.000	18.750
Congressional Adds Subtotals	4.827	23.750

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
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 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint enterprise data interoperability	Various	Various : Various	0.000	4.827	Jul 2022	5.000	Jul 2023	0.000		-		0.000	0.000	9.827	9.827
Prime Enhanced Engine Package (EEP)	C/CPFF	Pratt & Whitney : East Hartford, Connecticut	0.000	0.000		16.580	Aug 2023	0.000		-		0.000	0.000	16.580	16.580
		Subtotal	0.000	4.827		21.580		0.000		-		0.000	0.000	26.407	N/A

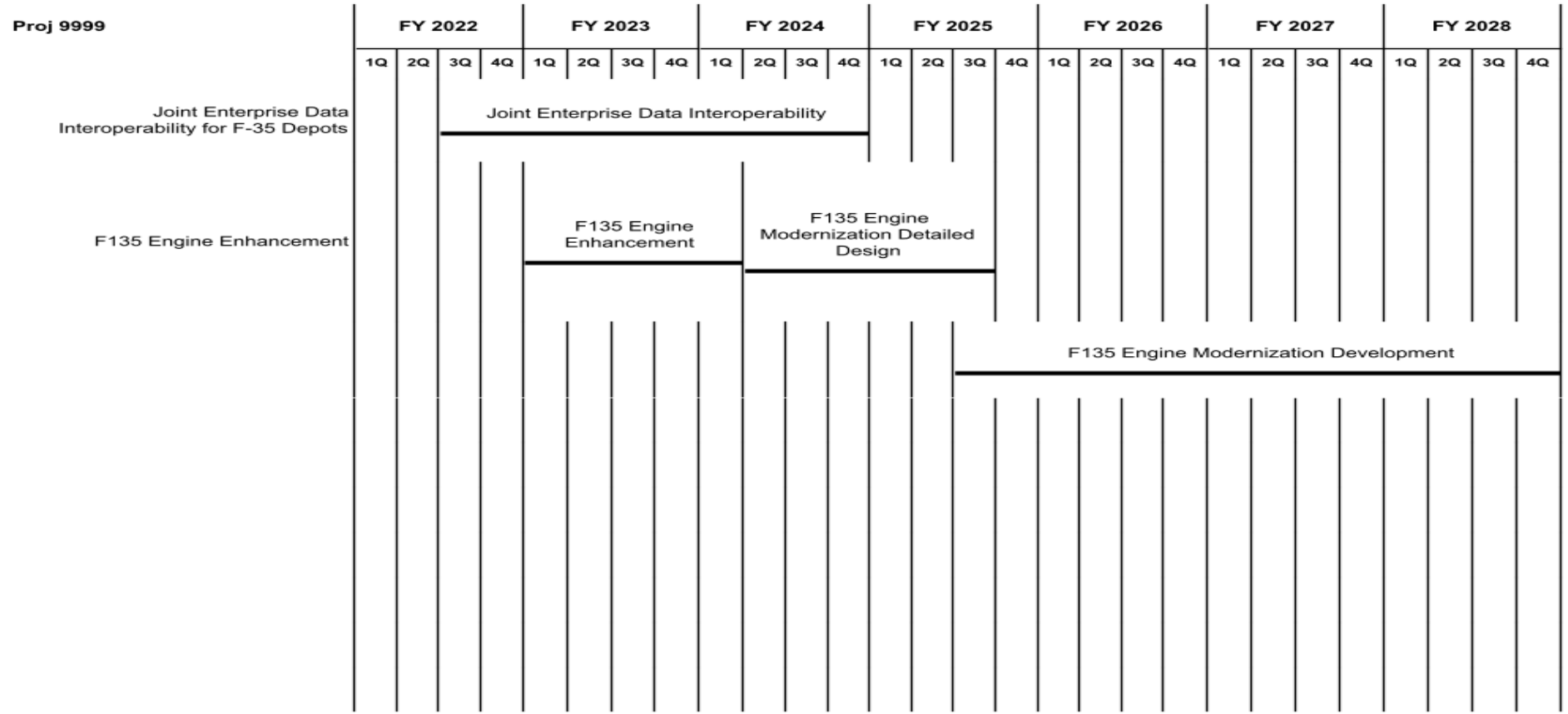
Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engine Enhancement Engineering Support	Various	Various : Various	0.000	0.000		2.170	Aug 2023	0.000		-		0.000	0.000	2.170	2.170
		Subtotal	0.000	0.000		2.170		0.000		-		0.000	0.000	2.170	N/A

	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	4.827		23.750		0.000		-		0.000	0.000	28.577	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 9999 / *Congressional Adds*



2024PB - 0604840N - 9999

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
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 for F-35 Depots: Joint Enterprise Data Interoperability	3	2022	4	2024
F135 Engine Enhancement: F135 Engine Enhancement (FY22 and FY23 Congressional Add Funding Only)	1	2023	1	2024
F135 Engine Enhancement: PP F135 Engine Modernization Detailed Design	2	2024	3	2025
F135 Engine Enhancement: PP F135 Engine Modernization Development	3	2025	4	2028