Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy											Date: February 2020	
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 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	215.366	354.960	413.875	-	413.875	284.709	198.878	214.861	199.694	Continuing	Continuing
2936: *F-35C C2D2*	0.000	215.366	354.960	413.875	-	413.875	284.709	198.878	214.861	199.694	Continuing	Continuing
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 and pre-development systems engineering for Block 4 continues as Initial Operational Capability (IOC) is met for each variant during System Development and Demonstration (SDD).

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 FY 2014. These analyses serve as the basis for the Block 4 (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 FY 2017 and FY 2018 include systems engineering, risk reduction, and infrastructure required to deliver full air system Block 4 capabilities to support initial fleet availability of Block 4 upgrades in FY 2020 with the fielding of Auto Ground Collision Avoidance System (AGAS).

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 FY 2019 due to budget being moved from BA05 to BA07.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy					Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*		R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*			
B. Program Change Summary ($ in Millions)	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**
Previous President's Budget	227.998	383.741	351.536	-	351.536
Current President's Budget	215.366	354.960	413.875	-	413.875
Total Adjustments	-12.632	-28.781	62.339	-	62.339
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-28.781			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.451	0.000			
• SBIR/STTR Transfer	-7.181	0.000			
• Program Adjustments	0.000	0.000	61.600	-	61.600
• Rate/Misc Adjustments	0.000	0.000	0.739	-	0.739

Change Summary Explanation

The FY2020 USN funding request was decreased by $28.781 million, due to prior year execution delays.

The FY2021 USN funding request was increased by $62.339 million for NWCF Adjustments, and rephasing of Block 4 Funding.

PE 0604840M/N replacing PE 0604810M/N beginning in FY19 due to budget being moved from BA05 to BA07.
Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2936: *F-35C C2D2*	0.000	215.366	354.960	413.875	-	413.875	284.709	198.878	214.861	199.694	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost, including International partner contributions, USN, USMC, and USAF funding: FY2021: $1,938.386M

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

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

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

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Product Development - Block 4 Planning and Systems Engineering	319.964	429.358	583.724	0.000	583.724
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Description: Block 4 Planning and Systems Engineering from preliminarily design and requirements decomposition through completion of Developmental Flight Test for all variants of the F-35 aircraft. Modernization efforts include Requirements Decomposition and continuous development and release of capabilities identified as Block 4 upgrades. This is a continuation of the previous Block 4 developmental contracts, which will include activities leading to successful completion of Developmental Flight Test, to include select facility upgrades required for Block 4 research, development, test and evaluation. Included in Block 4 are upgraded capabilities and continuous improvements to maintain Air System viability against evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), the Fifth Generation Fighter Modernization ICD, and the Block 4 Capability Development Document (CDD), reduce life cycle cost, and improve operational suitability. Continuous risk reduction activities to include Air System Integration, preplanning for subsequent Block 4 Modernization events, and investments to deliver the full Block 4 Air System capabilities as needed. C2D2 capability planning includes an efficient transition from F-35 SDD to C2D2. As SDD development activities ramp down C2D2 will assume responsibility for improvements and modernization efforts. ***FY 2020 Plans:*** Continue Post-PDR risk reduction activities to include Air System Integration and planning. Continue with Agile development of capabilities through Flight Test. Continue development and maturity of key long lead capabilities and service unique weapons. Complete development of software to be available for fielding to meet warfighter need. ***FY 2021 Base Plans:*** Continue Post-PDR risk reduction activities to include Air Ship Integration and planning. Continue with Agile development of capabilities through Flight Test. Continue development and maturity of key long lead capabilities and service unique weapons. Complete development of software drops 30P6 (Q1 2021) 30P7 (Q3 2021) to be available for fielding to meet warfighter need. C2D2 capability planning which includes an efficient transition from F-35 SDD to C2D2. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase due to planned program ramp up of Block 4 capabilities and development efforts.					
Title: Product Development - Technology Refresh 3 (TR-3)	156.992	199.000	241.000	0.000	241.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Description: Technology Refresh 3 (TR3) conducts post Critical Design Review (CDR) design activities. This effort will develop and deliver a TR3 system through full flight-worthy certification and production readiness review for Lot 15. The design of TR3 subsystems Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit Display Electronics Unit and Display Unit (PCD-EU, PCD-DU) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to support Block 3F functionality and incorporation of all Block 4 capabilities. This work includes nonrecurring engineering for the developing, test, and certification of the ICP, AMS, PCD-EU, and PCD-DU, and is required to support 4x processing growth factor based on the current processing estimated for all 3F capabilities. ***FY 2020 Plans:*** The TR-3 program will continue middleware software development to ensure and validate compatibility with current F-35 sensors and weapon loads. Continued lab test and verification will ensure timely first article delivery to the production line by FY23. ***FY 2021 Base Plans:*** The TR-3 program will continue with middleware software development to ensure and validate compatibility with current F-35 sensors and weapon loads. Continued lab test and verification, along with a review and approval of TR-3 hardware for release to flight test will ensure timely first article delivery to the production line by FY23. Key milestone events are Test Readiness Review (TRR) and Flight Readiness Review (FRR) to support Integrated Test. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Technical complexity of TR3 system is driving increased cost. Suppliers are challenged to meet demanding schedule with one holistic hardware/software system; therefore, interim releases of hardware reduce risk and enable parallel software development. Schedule pressure in meeting Lot 15 production timeline demands a labor increase to mitigate risk to Lot 15 production.					
Title: Infrastructure and Support Costs	230.384	324.263	333.462	0.000	333.462
Articles:	-	-	-	-	-
Description: Funding will support infrastructure investment planning and other test planning activities required for Block 4 development, integration, test and evaluation. Funding related to the Integrated Test Force, government, and contractor labor. Support efforts for airframe, air vehicle systems, air ship integration, mission					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
systems, weapons integration, offboard mission support, autonomic logistics development, joint reprogramming enterprise and modeling and joint simulation environment activities, including Nimble Lightning efforts. Funding related to the Integrated Test Force, government, and contractor labor. Other costs in support of ranges, chase planes and DT site operations. USAF only will fund additional PMA to transition to a final hybrid product support integrator (HPSI) which will support sustainment analysis with product support managers, focused on long term strategic planning and transition to a final integrated support plan. ***FY 2020 Plans:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Support efforts for airframe, air vehicle systems, air systems integration, mission systems, weapons integration, offboard mission support, autonomic logistics development, joint reprogramming enterprise and modeling and simulation environment activities. Transfer of integrated test force requirement to Block 4 as F-35 SDD draws to closure. USAF only will fund additional PMA to transition to a final hybrid product support integrator (HPSI) which will support sustainment analysis with product support managers, focused on long term strategic planning and transition to a final integrated support plan. ***FY 2021 Base Plans:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Support efforts for airframe, air vehicle systems, air ship integration, mission systems, weapons integration, offboard mission support, autonomic logistics development, modeling and simulation, training investments, and joint simulation environment activities to include Nimble Lightening. Continue integrated test focus on Block 4 as F-35. Upgraded capabilities and improvements to include continuous upgrade of joint reprogramming enterprise labs, lab tooling, Mission Data File (MDF) development, and replacement of Ground Data Receptacle and Mission Planning system. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase due to planned program ramp up of Block 4 capabilities and development efforts.					
Title: Test and Evaluation	243.188	531.879	636.200	0.000	636.200
Articles:	-	-	-	-	-
Description: Integrated Test activities in support of Block 4, to include Lockheed Martin and Pratt & Whitney support at all test sites. Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modification necessary to bring DT aircraft fleet to a more production representative and sustainable					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
configuration, and to develop flight test instrumentation and release test software to meet Block 4 requirements. Additional upgrades required to support development and evaluation of improvements driven by changes in the threat environment and as identified in the Electronic Warfare ICD, the Fifth Generation Fighter Modernization ICS, and the Block 4 Capability Development Document (CDD). Efforts include non-recurring engineering and procurement of a test article to evaluate service life of F-35B STOVL Aircraft. ***FY 2020 Plans:*** Funding will support a flight test execution capacity to develop and verify Block 4 and other capabilities. Funding also supports investment planning and prioritization required to maintain future development capabilities. This includes continuing work on instrumenting new DT aircraft, and delivery and install of upgraded hardware as part of the DT aircraft viability effort, as well as test engine support. Funding will support Block 4 Integrated Test activities. Additionally, this funding supports laboratory upgrades required to support development and verification of capabilities in a relevant environment. Efforts include non-recurring engineering and procurement of a test article to evaluate service life of F-35 aircraft. ***FY 2021 Base Plans:*** Funding will support Block 4 Integrated Test activities and flight test execution capacity to develop and verify Block 4 and other capabilities. Funding also supports investment planning and prioritization required to maintain future development capabilities. This includes continuing work on instrumenting new test aircraft, delivery and install of upgraded hardware as part of the DT aircraft viability effort, and test engine support. Additionally, this funding supports laboratory upgrades required to support development, verification of capabilities in a relevant environment, as well as any cyber security requirements of Block 4 capabilities. Efforts include non-recurring engineering and procurement of a test article to evaluate service life of F-35B STOVL Aircraft. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Increase due to planned program ramp up as Block 4 capabilities and development efforts mature. Additional test sites, personnel, and new aircraft are needed to support the additional workload.					
Title: Autonomic Logistics Information System (ALIS) / Operational Data Integrated Network (ODIN) Development	112.243	162.000	144.000	0.000	144.000
Articles:	-	-	-	-	-
Description: Autonomic Logistics Information System (ALIS) continues to deliver the core logistics and maintenance infrastructure requirements for the F-35 enterprise. ALIS includes features such as aircraft					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
scheduling, training delivery, record keeping, technical data delivery, supply chain management, maintenance management, pilot and maintenance debriefing, and mission planning. The ALIS development program is focused on two primary lines of effort: supporting the F-35 enterprise Data Transformation effort and continuously integrating and delivering new capability. Current ALIS will be replaced with a new system called the F-35 Operational Data Integrated Network (ODIN). Led by the F-35 Joint Program Office, ODIN will be developed in a collaborative partnership with government organizations and industry partners. ODIN will be designed from the start with significant warfighter engagement, ensuring that the system fully supports F-35 worldwide operations. Leveraging modern software, data management tools, and processes, ODIN will be a cloud-native system incorporating a government-managed integrated data environment and user-centered applications. The ALIS re-architecture effort that began in FY 2019 will continue under ODIN and complete fielding in FY 2023. ODIN will redesign its software, data, and hardware architecture with a focus on cybersecurity, affordability, resiliency, and supportability. Under the umbrella of current ALIS, an Agile DevOps pilot was established to rapidly deliver capability updates to the fleet and change the way that current ALIS delivers software. ***FY 2020 Plans:*** Continue Current ALIS software development efforts as well as begin transition to new Operational Data Integrated Network (ODIN) configuration. Increase the number of DevOps product teams and begin to merge with ODIN effort efforts. Refactor ALIS software in accordance with the ODIN architecture that began in FY19. Demonstrate new software and hardware architecture. ***FY 2021 Base Plans:*** Continue to support Current ALIS software development efforts, including addressing hardware and software obsolescence. The Agile DevOps pilot program established under ALIS will transition from a pilot program by integrating all practices and processes to develop the Operational Data Integrated Network (ODIN) configuration. This configuration will transition to operational units, and software updates will be continuously integrated and delivered using the new architecture and new development practices. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Decrease due to the concurrent development of Current ALIS and Operational Data Integrated Network (ODIN) in FY 2020.					
Accomplishments/Planned Programs Subtotals	1,062.771	1,646.500	1,938.386	0.000	1,938.386

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
USAF Continuous Capability Development and Delivery	-	642.371	785.336	-	785.336
F-35B C2D2	222.644	391.165	379.549	-	379.549
International Continuous Capability Development and Delivery	209.763	258.004	359.626	-	359.626
USAF Continuous Capability Development and Delivery	414.998	-	-	-	-
Navy Subtotals	215.366	354.960	413.875	0.000	413.875

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• RDT&E/0604840M/3410: *F-35B C2D2*	222.644	391.165	379.549	-	379.549	323.597	294.404	283.981	244.932	Continuing	Continuing
• USAF RDT&E/0207142F: *USAF Continuous Capability Development and Delivery*	414.998	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• International: *International Continuous Capability Development and Delivery*	209.763	258.004	359.626	-	359.626	285.969	211.292	208.053	177.542	Continuing	Continuing
• USAF RDT&E/0604840F: *USAF Continuous Capability Development and Delivery*	0.000	642.371	785.336	-	785.336	549.279	450.915	521.012	586.709	Continuing	Continuing

Remarks

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

D. Acquisition Strategy

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime LM Phase II Development	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	260.674	Dec 2018	467.078	Nov 2019	563.504	Nov 2020	-		563.504	1,035.020	2,326.276	2,225.495
Prime LM TR-3 Development	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	156.992	Dec 2018	199.000	Nov 2019	241.000	Nov 2020	-		241.000	510.000	1,106.992	1,103.578
Prime LM BOA 0020 (Nimble Lightning + Pilot Training)	C/CPFF	Various : Various	0.000	4.500	Jan 2019	4.650	Jan 2020	4.650	Jan 2021	-		4.650	17.500	31.300	31.300
Flight Test Assets	Various	Lockheed Martin : FT. Worth, TX	0.000	11.571	Jan 2019	69.317	Dec 2019	55.400	Dec 2020	-		55.400	406.000	542.288	549.650
Prime LM TBD DT AC Viability	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	25.550	Jan 2019	51.700	Dec 2019	83.100	Dec 2020	-		83.100	415.000	575.350	575.350
Prime PW Propulsion	SS/CPFF	Pratt Whitney : East Hartford, Connecticut	0.000	30.481	Oct 2018	49.262	Nov 2019	54.400	Nov 2020	-		54.400	220.000	354.143	456.250
Prime LM Developmental Foundation Contract	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	82.000	Nov 2018	191.400	Nov 2019	193.400	Nov 2020	-		193.400	437.800	904.600	904.600
Prime LM JRE Dev.	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	11.940	Jan 2019	24.000	Dec 2019	60.900	Nov 2020	-		60.900	589.916	686.756	747.956
Prime LM ALIS / ODIN	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	6.968	Dec 2018	51.000	Dec 2019	69.000	Dec 2020	-		69.000	159.000	285.968	289.411
Prime LM ALIS Dev	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	52.443	Jul 2019	40.000	Dec 2019	5.000	Nov 2020	-		5.000	0.000	97.443	90.000
Prime LM Air Vehicle Integration	C/BA	Lockheed Martin : FT. Worth, TX	0.000	40.000	Jun 2019	20.000	Nov 2019	10.000	Nov 2020	-		10.000	0.000	70.000	70.000
Prime LM F-35B Fatigue Test Article	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	0.000		8.000	Jan 2020	14.000	Dec 2020	-		14.000	91.000	113.000	155.000
Training Investments	C/CPIF	Lockheed Martin : FT. Worth, TX	0.000	5.000	Apr 2019	28.000	Dec 2019	65.000	Dec 2020	-		65.000	116.000	214.000	231.000
Systems Engineering	Various	Various : Various	0.000	19.290	Jan 2019	35.480	Jan 2020	37.220	Jan 2021	-		37.220	88.000	179.990	182.000
		Subtotal	0.000	707.409		1,238.887		1,456.574		-		1,456.574	4,085.236	7,488.106	N/A

Remarks

Added Prime LM Air Vehicle Integration line to separate Air System risk reduction activities.
Block 4 Modernization on R-2A includes Phase II Development, Air Vehicle Integration and Systems Engineering.
Infrastructure and Support on R-2A includes Nimble Lightning, LM JRE Development & Training Investments.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime LM Phase II Development Contract is a hybrid CPIF/CPAF contract. Prime LM F-35B Fatigue Test Article is a hybrid CPIF/CPFF contract. Per USD(A&S) announcement, changing ALIS Next to ALIS / ODIN. Prime LM ALIS / ODIN Contract is a hybrid CPFF/CPIF contract. Flight Test assets include weapons to support Test and assets needed for flight test instrumentation.															

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSE/IPT Development Support	WR	NAWCAD : Patuxent River, MD	0.000	38.947	Dec 2018	50.740	Dec 2019	49.500	Dec 2020	-		49.500	Continuing	Continuing	Continuing
IPT Development Support	WR	NAWCWD : China Lake, CA	0.000	10.298	Dec 2018	11.250	Dec 2019	12.755	Dec 2020	-		12.755	43.083	77.386	-
IPT Development Support	Various	Eglin : Eglin, AFB	0.000	2.511	Dec 2018	4.500	Dec 2019	4.755	Dec 2020	-		4.755	15.268	27.034	-
IPT Development Support	Various	Various : Various	0.000	19.521	Dec 2018	23.940	Dec 2019	25.400	Dec 2020	-		25.400	34.513	103.374	-
Technical Planning/AFRL Capabilities Support	MIPR	Various : Various	0.000	8.344	Dec 2018	9.000	Dec 2019	10.000	Dec 2020	-		10.000	47.000	74.344	-
JRE Development Support	MIPR	Various : Various	0.000	24.705	Dec 2018	21.000	Dec 2019	29.475	Dec 2020	-		29.475	102.084	177.264	-
ALIS / ODIN Development Support	Various	Various : Various	0.000	35.220	Dec 2018	55.000	Dec 2019	53.000	Dec 2020	-		53.000	209.000	352.220	-
ALIS Next Development Support	MIPR	Various : Various	0.000	17.612	Dec 2018	16.000	Dec 2019	17.000	Dec 2020	-		17.000	35.000	85.612	-
		Subtotal	0.000	157.158		191.430		201.885		-		201.885	Continuing	Continuing	N/A

Remarks

Changed ALIS Development Support to ALIS DevOps Development Support to capture DevOps effort.
Per USD(A&S) announcement, changing ALIS Next to ALIS / ODIN.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0604840N / *F-35C C2D2*	Project (Number/Name) 2936 / *F-35C C2D2*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	42.400	Dec 2018	57.500	Dec 2019	74.500	Dec 2020	-		74.500	180.000	354.400	-
Developmental Test & Evaluation	WR	NAWCWD : China Lake , CA	0.000	4.966	Dec 2018	7.200	Dec 2019	7.650	Dec 2020	-		7.650	40.470	60.286	-
Developmental Test & Evaluation Edwards/AFB	Various	Edwards AFB : Edwards AFB, CA	0.000	36.275	Dec 2018	40.300	Dec 2019	67.000	Dec 2020	-		67.000	110.470	254.045	-
Developmental Test & Evaluation	Various	Various : Various	0.000	3.500	Dec 2018	3.700	Dec 2019	3.750	Dec 2020	-		3.750	57.087	68.037	-
Operational Test & Evaluation	WR	Nellis AFB : Nellis AFB, NV	0.000	6.445	Dec 2018	38.500	Dec 2019	32.800	Dec 2020	-		32.800	72.500	150.245	-
USMC Operational Test & Evaluation	WR	Yuma Air Station : Yuma Air Station	0.000	0.000		0.000	Nov 2019	7.000	Nov 2020	-		7.000	24.500	31.500	-
USN Operational Test & Evaluation	WR	Various : Various	0.000	0.000		0.000	Nov 2019	16.200	Nov 2020	-		16.200	68.300	84.500	-
		Subtotal	0.000	93.586		147.200		208.900		-		208.900	553.327	1,003.013	N/A

Remarks

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

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

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFLCMC Civilian Pay	C/BA	AFLCMC CIVPAY : Wright Patterson, AFB	0.000	37.886	Oct 2018	44.172	Oct 2019	45.497	Oct 2020	-		45.497	231.610	359.165	364.164
HPSI Program Sppt.	C/BA	AFLCMC : Wright Patterson, AFB	0.000	12.078	Oct 2018	0.000	Oct 2019	0.000		-		0.000	0.000	12.078	12.078
Financial Mgmt Database Support IDS	C/BA	Various : Various	0.000	0.812	Dec 2018	1.565	Dec 2019	1.612	Dec 2020	-		1.612	4.301	8.290	8.290
Earned Value/Finance/ Cost ACT-I	C/BA	Various : Various	0.000	3.500	Dec 2018	4.201	Dec 2019	4.327	Dec 2020	-		4.327	23.518	35.546	35.546

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems High BOS	C/BA	Various : Various	0.000	0.892	Dec 2018	0.000	Dec 2019	0.000		-		0.000	45.342	46.234	49.979
Operating Core Support	C/BA	Various : Various	0.000	11.074	Dec 2018	10.233	Dec 2019	10.540	Dec 2020	-		10.540	22.579	54.426	54.151
Other Core Civ Pay	WR	Various : Various	0.000	28.299	Dec 2018	0.000	Dec 2019	0.000		-		0.000	0.000	28.299	-
Other Core Contractor Sppt.	WR	Various : Various	0.000	6.382	Dec 2018	5.062	Dec 2019	5.163	Dec 2020	-		5.163	0.000	16.607	-
Travel	Various	Various : Various	0.000	3.695	Oct 2018	3.750	Oct 2019	3.888	Oct 2020	-		3.888	Continuing	Continuing	Continuing
		Subtotal	0.000	104.618		68.983		71.027		-		71.027	Continuing	Continuing	N/A

Remarks

Added Operating Core Support line.
Beginning in FY20 HPSI will be in a seperate BPAC and no longer included in DoN C2D2 budget docs.

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	0.000	1,062.771		1,646.500		1,938.386		-		1,938.386	Continuing	Continuing	N/A
USAF Continuous Capability Development and Delivery	-	-		642.371		785.336		-		785.336			-
F-35B C2D2	-	222.644		391.165		379.549		-		379.549			-
International Continuous Capability Development and Delivery	-	209.763		258.004		359.626		-		359.626			-
USAF Continuous Capability Development and Delivery	-	414.998		-		-		-		-			-
Project Cost Totals	0.000	215.366		354.960		413.875		-		413.875	0.000	0.000	-

Remarks

Subtotals and totals may not add due to rounding.

Prior Year reflects $0M due to PE 0604810M/N ending in FY18 and being replaced by PE 0604840M/N in FY19 as budget moves from BA05 to BA07.

FY 2019 reflects $426.494M USAF/$215.366M USN/$222.644 USMC/$209.763M International/Total $1,074.718M
FY 2020 reflects $694.455M USAF/$383.741M USN/$422.881M USMC/$258.004M International/Total $1,759.081M
FY 2021 reflects $785.336M USAF/$413.875M USN/$379.549M USMC/$359.626M International/Total $1,938.386M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

JSF Continuous Capability Development and Delivery (C2D2) Includes:
USAF PE 0207142F BPAC 675346

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
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	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
USAF PE 0604840F BPAC 675346 USN PE 0604810N Project Unit 2936 - ends FY18 USMC PE 0604810M Project Unit 2935 - ends FY18 USN PE 0604840N Project Unit 2936 - begins FY19 USMC PE 0604840M Project Unit 2935 - begins FY19 USN PE 0604800N Project Unit 9999 (FY14): $1.500 USMC PE 0604800M Project Unit 999 (FY14) : $1.500									

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Block 4 Planning Schedule

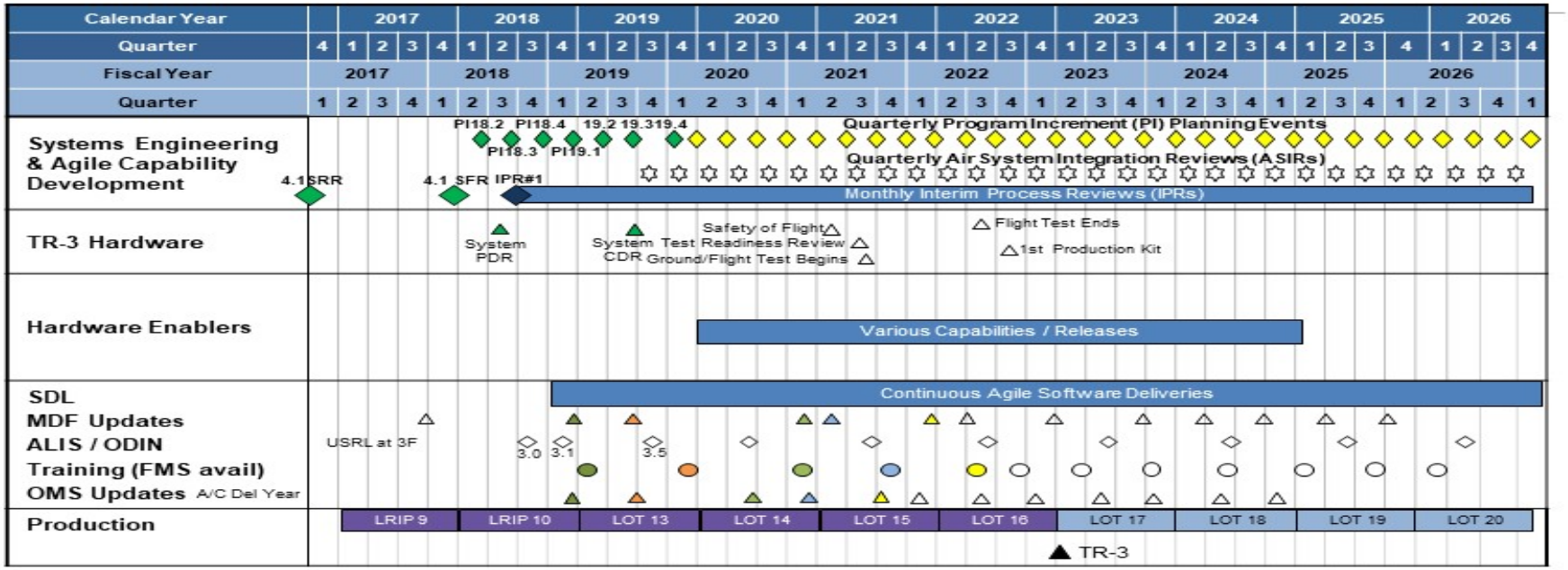

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0604840N / *F-35C C2D2*	**Project (Number/Name)** 2936 / *F-35C C2D2*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2936				
Systems Engineering & Development: Phase II Development	1	2019	4	2024
Systems Engineering & Development: Modernization Contract	4	2021	4	2024
Systems Engineering & Development: Development Foundation Contract	1	2019	1	2023
Systems Engineering & Development: Development & Maturation IDIQ Contract	3	2023	4	2025
Agile Process & Capability Development: Agile Process & Capability Development	1	2019	4	2025
Verification and Validation: DT Aircraft Upgrades	1	2019	3	2021
Verification and Validation: Integrated Test	1	2019	4	2025
Verification and Validation: TR-3 Operational Test	2	2022	1	2023
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 13 Full Funding / Production / Delivery	4	2019	4	2019
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 14 Full Funding / Production / Delivery	1	2020	1	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 15 Full Funding / Production / Delivery	2	2021	2	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 16 Full Funding / Production / Delivery	2	2022	2	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 17 Full Funding / Production / Delivery	2	2023	2	2023
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 18 Full Funding / Production / Delivery	2	2024	2	2024
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 19 Full Funding / Production / Delivery	2	2025	2	2025