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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207142F / <i>F-35 Squadrons</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	97.877	73.905	334.530	549.501	0.000	549.501	598.498	510.184	315.860	292.958	Continuing	Continuing
675346: <i>F-35</i>	75.951	48.162	299.408	472.067	0.000	472.067	507.159	415.855	278.532	281.315	Continuing	Continuing
676011: <i>JSF DUAL CAPABLE AIRCRAFT</i>	21.926	25.743	35.122	77.434	0.000	77.434	91.339	94.329	37.328	11.643	Continuing	Continuing

Program MDAP/MAIS Code: 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 Air Force, United States Navy, 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 FY2014. 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 FY2017 and FY2018 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 FY2021.

C2D2 efforts designated as Block 4 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. Additionally, the F-35 JSF Operational Requirements Document (ORD) calls for the F-35A to have the capabilities and provisions for Dual-Capable Aircrafts (DCA) operations in the first post-SDD block upgrade. DCA refers to the capability to carry and deliver conventional and non-conventional weapons. DCA operations for the F-35A is internal carriage of up to two B-61s. Due to extensive certification requirements, the DCA capability planning and design, testing and certification will continue throughout Block 4.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark and Norway are participants in F-35 modernization. The program shown here reflects United States Air Force 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.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver F-35 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	153.045	334.530	510.637	0.000	510.637
Current President's Budget	73.905	334.530	549.501	0.000	549.501
Total Adjustments	-79.140	0.000	38.864	0.000	38.864
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-76.332	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.808	0.000			
• Other Adjustments	0.000	0.000	38.864	0.000	38.864

Change Summary Explanation

FY 2017: -\$76.332M Congressional Reduction; -2.808M SBIR Reduction

FY 2019: \$30.418M Dual Capable Aircraft (DCA) B61-12 integration; \$8.446M Autonomic Logistics Information System (ALIS) Global Support Solution (GSS) Enablers

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons				Project (Number/Name) 675346 / F-35			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675346: F-35	75.951	48.162	299.408	472.067	0.000	472.067	507.159	415.855	278.532	281.315	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost, including International partner contributions, USN, USMC, and USAF funding: FY2017 \$167.902M; FY2018 \$738.389M; FY2019 \$1,141.901M.

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

R-2A (section B)/R-3 displays combined program for JSF C2D2.

F-35 C2D2 Includes:

USAF PE 0207142F BPAC 675346

FY13: USN PE 0604800N Project Unit 2261

FY14: USN PE 0604800N Project Unit 9999

FY15-18: USN PE 0604810N Project Unit 2936

FY19: USN PE 0604840N Project Unit 2936

FY13: USMC PE 0604800M Project Unit 2262

FY14: USMC PE 0604800M Project Unit 9999

FY15-18: USMC PE 0604810M Project Unit 2935

FY19: USMC PE 0604840M Project Unit 3410

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)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Block 4 Planning and System Engineering	36.716	314.240	420.931	0.000	420.931

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 675346 / F-35
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Block 4 Planning and Systems Engineering preliminarily design and delta System Requirements Review (SRR) for all variants of the F-35 Aircraft. Modernization efforts is the Requirements Decomposition of capabilities for the entire Block 4 upgrade to include sub-blocks 4.1 and 4.2. This is a continuation of the previous Block 4 Requirements Decomposition effort which will include activities leading up to a successful System Functional Review (SFR) and 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. Expected completion of a Block 4.1 Preliminary Design Review (PDR) and a Block 4.2 System Requirements Review (SRR) will address additional Block 4 capabilities requirements. Post-PDR risk reduction, preplanning for subsequent Block 4 Modernization events, and investments to deliver the full Block 4 Air System capabilities are included.</p> <p>FY 2018 Plans: Conduct a Block 4.1 System Functional Review (SFR). Award Phase II contract for Block 4.1 PDR, Block 4.2 SRR, and Post-PDR risk reduction and Planning. Continuing development and maturity of key long lead capabilities and service unique weapons.</p> <p>FY 2019 Base Plans: Continue Block 4 Phase II contract development. Conduct Block 4.1 PDR and Block 4.2 SRR, as well as continuing Post-PDR risk reduction and planning.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$106.691M; see above for details.</p>					
<p>Title: Technology Refresh 3 (TR-3)</p> <p>Description: Technology Refresh 3 (TR-3) Design Competition, Development, Integration, and Test. This is the design phase of TR-3 program fully supports Block 3F functionality and allows incorporation of all Block 4 capabilities documented in the System Requirements Document (SRD). TR-3 hardware redesign is required to support 4X processing growth factor based on the current processing estimates for all 3F capabilities. Redesign of TR-3 subsystems Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit</p>	77.177	96.025	175.696	0.000	175.696

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Display (PCD)) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to take the design of the TR-3 System through Critical Design Review (CDR).</p> <p>FY 2018 Plans: The TR-3 program will continue design toward Critical Design Review of the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). In addition the TR-3 program will prototype the middleware software that will enable F-35's new messaging architecture delivered as part of TR-3 and ensure compatibility with current F-35 sensors. Additionally the initial lab stand up will occur to ensure timely first article delivery to the production line in FY23.</p> <p>FY 2019 Base Plans: The TR-3 program will continue design toward Critical Design Review of the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). In addition the TR-3 program will prototype the middleware software that will enable F-35's new messaging architecture delivered as part of TR-3 and ensure compatibility with current F-35 sensors. Additionally the initial lab stand up will occur to ensure timely first article delivery to the production line in FY23.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$79.671M; see above for details.</p>					
<p>Title: Infrastructure and Support Costs</p> <p>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. Other costs in support of ranges, chase planes and DT site operations.</p> <p>FY 2018 Plans: Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Transfer of integrated test force requirement to C2D2 F-35 as 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. Conduct strategic basing analysis to determine permanent location for core of HPSI.</p> <p>FY 2019 Base Plans:</p>	52.009	132.026	244.520	0.000	244.520

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Transfer of integrated test force requirement to C2D2 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. Conduct strategic basing analysis to determine permanent location for core of HPSI.

FY 2019 OCO Plans:

N/A

FY 2018 to FY 2019 Increase/Decrease Statement:

Increase of \$112.494M; see above for details.

Title: Test and Evaluation

Description: Developmental Test activities in support of Block 4. Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modification necessary to bring DT aircraft fleet to a more production representative and sustainable configuration. 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).

FY 2018 Plans:

Funding will support investment planning and prioritization required to maintain future development capability. This funding supports the non-recurring engineering (NRE) for capability upgrades and service life extension modifications to include engine, structural and mission systems updates to maintain the viability of DT fleet for C2D2 efforts. This funding also supports laboratory upgrades required to support development and verification of capabilities in a relevant environment.

FY 2019 Base Plans:

Funding will support flight test execution to ensure Block 4 capabilities are delivered as designed. Funding also supports investment planning and prioritization required to maintain future development capabilities. This includes instrumenting new DT aircraft, ordering the replacement of pre-LRIP aircraft engines, continuing the FY18 NRE work, and delivery and install of upgraded hardware as a part of the DT aircraft viability effort.

	2.000	196.098	300.754	0.000	300.754

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Additionally, this funding supports laboratory upgrades required to support development and verification of capabilities in a relevant environment.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$104.656M; see above for details.					
Accomplishments/Planned Programs Subtotals	167.902	738.389	1,141.901	0.000	1,141.901
Other Service Funding Adjustment	119.740	438.981	669.834	-	669.834
Air Force Subtotals	48.162	299.408	472.067	0.000	472.067

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 0207142F 6011: Dual Capable Aircraft (DCA), BPAC 676011	25.743	35.122	77.434	-	77.434	91.339	94.329	37.328	11.643	Continuing	Continuing
• RDTE 05 PE 0604810N 2936: F-35C Follow-on Modernization (CV)	25.041	143.855	-	-	-	-	-	-	-	0.000	168.896
• RDTE 07 PE 0604840N 2936: F-35C Follow-on Modernization (CV)	-	-	252.360	-	252.360	223.901	184.210	117.189	119.602	Continuing	Continuing
• RDTE 05 PE 0604810M 2935: F-35B Follow-on Modernization (STOVL)	29.691	144.958	-	-	-	-	-	-	-	0.000	174.649
• RDTE 07 PE 0604840M 3410: F-35B Follow-on Modernization (STOVL)	-	-	259.122	-	259.122	228.719	189.038	122.592	125.044	Continuing	Continuing
• International: International FoM	65.008	150.168	158.352	-	158.352	160.705	166.023	158.811	158.811	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 Air Force.

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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

PE 0604810M/N ending in FY18 and continues in PE 0604840M/N as budget moves from BA05 to BA07.

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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime LM 18-C-1004 PHASE II	SS/CPFF	Lockheed Martin : Ft Worth, TX	0.000	28.140	Feb 2018	276.520	Dec 2017	278.448	Dec 2018	-		278.448	1,031.289	1,614.397	1,614.161
Prime LM 14-G-0020 TR3	C/CPFF	Lockheed Martin : Ft Worth, TX	19.660	77.177	Mar 2017	96.025	Dec 2017	175.696	Dec 2018	-		175.696	510.000	878.558	878.558
Prime LM BOA 0020 (Nimble Lightning+Pilot Training)	C/CPFF	Lockheed Martin : Ft Worth, TX	1.206	3.500	Sep 2017	4.250	Sep 2018	4.760	Mar 2019	-		4.760	17.500	31.216	31.216
Prime LM Flight Test Asset	Various	Various : TBD	0.000	-		37.548	Mar 2018	85.346	Jan 2019	-		85.346	406.000	528.894	528.894
Prime LM ECASE	SS/CPFF	Lockheed Martin : Ft Worth, TX	0.000	-		15.670	Feb 2018	69.850	Jan 2019	-		69.850	168.000	253.520	253.520
Prime LM TBD DT AC Viability	C/CPFF	Lockheed Martin : Ft Worth, TX	0.000	-		65.205	Feb 2018	100.100	Jan 2019	-		100.100	415.000	580.305	580.305
Product Development Sys Engineering	Various	Various : TBD	0.266	5.076	Dec 2016	17.800	Feb 2018	18.423	Jan 2019	-		18.423	88.000	129.565	129.565
Prime PW Propulsion	SS/CPFF	Pratt Whitney : TBD	0.000	-		-		49.450	Feb 2019	-		49.450	220.000	269.450	269.450
Prime LM Infrastructure	C/CPFF	Lockheed Martin : Ft Worth, TX	0.000	-		-		100.550	Nov 2018	-		100.550	345.000	445.550	445.550
Prior Year no longer funded in FYDP	Various	Various : TBD	144.540	-		-		-		-		-	0.000	144.540	144.540
Subtotal			165.672	113.893		513.018		882.623		-		882.623	3,200.789	4,875.995	N/A

Remarks

Block 4 Modernization R-2A includes Phase II, Nimble Lightning, ECASE, Systems Engineering & Propulsion.
 Added Prior Year No Longer Funded in FYDP line in Product Development section.
 Added Prime LM Phase 0 & Phase I Prior Year amounts to Prior Year No Longer Funded in FYDP line .

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NAWC Paxuent River	WR	NAWCAD : Paxuent River, MD	7.903	8.195	Dec 2016	15.750	Dec 2017	16.839	Dec 2018	-		16.839	Continuing	Continuing	-

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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NAWC China Lake	WR	NAWCWD : China Lake, CA	0.429	0.600	Dec 2016	8.150	Dec 2017	9.574	Dec 2018	-		9.574	43.083	61.836	-
Edwards Air Force Base	Various	Edwards AFB : Various	0.986	0.000		3.802	Dec 2017	4.050	Dec 2018	-		4.050	14.175	23.013	-
AFFTC / Eglin AFB	Various	Eglin : Various	0.015	2.250	Dec 2016	3.450	Jan 2018	3.393	Dec 2018	-		3.393	15.268	24.376	-
AFLCMC/Wright Patterson AFB	MIPR	AFLCMC : Wright Patterson AFB, OH	0.281	1.005	Dec 2016	1.125	Dec 2017	3.978	Dec 2018	-		3.978	13.923	20.312	-
Development Support	Various	Various : TBD	7.903	8.682	Dec 2016	8.852	Dec 2017	9.861	Dec 2018	-		9.861	34.513	69.811	-
Subtotal			17.517	20.732		41.129		47.695		-		47.695	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NAWC Paxutent River	Various	Various : Paxutent River, MD	0.000	-		34.995	Feb 2018	43.744	Dec 2018	-		43.744	174.872	253.611	-
NAWC China Lake	WR	NAWCWD : China Lake, CA	0.000	-		10.350	Feb 2018	11.563	Dec 2018	-		11.563	40.470	62.383	-
Edwards/AFB	Various	Edwards AFB : Edwards AFB, CA	0.000	-		25.250	Feb 2018	31.563	Dec 2018	-		31.563	110.470	167.283	-
Developmental Test & Evaluation	Various	Various : TBD	0.000	-		10.250	Feb 2018	12.813	Dec 2018	-		12.813	57.087	80.150	-
AFOTEC	MIPR	AFOTEC : Kirtland AFB, NM	0.700	2.000	Feb 2017	12.500	Feb 2018	15.625	Dec 2018	-		15.625	72.500	103.325	-
Subtotal			0.700	2.000		93.345		115.308		-		115.308	455.399	666.752	N/A

Remarks
Increase in Test and Evaluation funding due to transfer of Integrated Test Force (ITF) requirements from SDD to C2D2 budget.

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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFLCMC Civilian Pay	Various	AFLCMC CIV PAY : Wright Patterson AFB, OH	0.000	29.377	Oct 2016	44.700	Oct 2017	46.265	Dec 2018	-		46.265	231.610	351.952	-
Financial Mgmt Database Support IDS	C/CPAF	IDS : Arlington, VA	0.000	-		0.800	Jan 2018	0.850	Dec 2018	-		0.850	4.301	5.951	-
Earned Value/Finance/ Cost ACT-I	C/CPAF	ACT-I : Arlington, VA	0.000	-		4.500	Jan 2018	5.100	Dec 2018	-		5.100	23.518	33.118	-
CIO BOS	C/CPAF	Various : TBD	0.000	-		20.000	Jan 2018	22.500	Dec 2018	-		22.500	95.066	137.566	-
Systems System High BOS	Various	Various : TBD	0.000	-		9.336	Jan 2018	9.500	Dec 2018	-		9.500	45.342	64.178	-
Other CIO Services	Various	Not specified. : TBD	0.000	-		8.239	Jan 2018	8.622	Dec 2018	-		8.622	22.579	39.440	-
Travel	Various	Not specified. : TBD	0.000	1.900	Oct 2016	3.322	Oct 2017	3.438	Oct 2018	-		3.438	8.569	17.229	-
Subtotal			0.000	31.277		90.897		96.275		-		96.275	430.985	649.434	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	183.889	167.902	738.389	1,141.901	-	1,141.901	Continuing	Continuing	N/A
Other Service Funding Adjustment	107.938	119.740	438.981	669.834	-	669.834			-
Project Cost Totals	75.951	48.162	299.408	472.067	-	472.067	0.000	0.000	-

Remarks
 The Project information shown here reflects USN, USMC, USAF and International Partner funding total for each contract. By agreement, USN and USMC funding shares are approximately equal and when combined are equal to the USAF share. Partner funding share is based upon future aircraft procurement numbers updated annually in accordance with the Production, Sustainment, C2D2 (formerly Follow-on Modernization (FoM)) Memorandum of Agreement.

Subtotals and totals may not add due to rounding.

Prior Year reflects \$75.951M USAF/\$30.286M USN/\$29.726M USMC/\$47.926M International/Total \$183.889M
 FY 2017 reflects \$ 48.162M USAF/\$ 25.041M USN/\$29.691M USMC/\$ 65.008M International/Total \$167.902M
 FY 2018 reflects \$299.408M USAF/\$143.855M USN/\$144.958M USMC/\$150.168M International/Total \$738.389M
 FY 2019 reflects \$472.067M USAF/\$252.360 USN/\$259.122M USMC/\$158.352M International/Total \$1,141.901M

F-35 C2D2 Includes:
 USAF PE 0207142F BPAC 675346

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / <i>F-35 Squadrons</i>	Project (Number/Name) 675346 / <i>F-35</i>
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	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
FY13: USN PE 0604800N Project Unit 2261 FY14: USN PE 0604800N Project Unit 9999 FY15-18: USN PE 0604810N Project Unit 2936 FY19: USN PE 0604840N Project Unit 2936 FY13: USMC PE 0604800M Project Unit 2262 FY14: USMC PE 0604800M Project Unit 9999 FY15-18: USMC PE 0604810M Project Unit 2935 FY19: USMC PE 0604840M Project Unit 3410 International Partner Contributions									

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 675346 / F-35
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
675346 / F-35																												
Requirements: Final CDD (JROC)			■																									
Acquisition: Block 4 Phase II Contract Award							■																					
Acquisition: Interim Program Review (IPR) FY18							■																					
Acquisition: Interim Program Review (IPR) FY19											■																	
Acquisition: Interim Program Review (IPR) FY20															■													
Acquisition: Interim Program Review (IPR) FY21																			■									
Acquisition: Interim Program Review (IPR) FY22																							■					
Acquisition: Interim Program Review (IPR) FY23																											■	
Contracting: Block 4 Phase I	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Contracting: Block 4 Phase II																												
Systems Engineering: 4.1 Initial Preliminary Design Review (PDR)											■																	
Systems Engineering: 4.2 Initial Preliminary Design Review (PDR)															■													
Systems Engineering: 4.1 Initial System Requirements Review (SRR)	■																											
Systems Engineering: 4.1 Initial System Functional Review (SFR)							■																					
Systems Engineering: 4.2 Initial System Requirements Review (SRR)															■													
Test & Evaluation: 4.1 Test																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / <i>F-35 Squadrons</i>	Project (Number/Name) 675346 / <i>F-35</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
675346 / F-35				
Requirements: Final CDD (JROC)	3	2017	3	2017
Aquisition: Block 4 Phase II Contract Award	2	2018	2	2018
Acquisition: Interim Program Review (IPR) FY18	1	2018	1	2018
Acquisition: Interim Program Review (IPR) FY19	1	2019	1	2019
Acquisition: Interim Program Review (IPR) FY20	1	2020	1	2020
Acquisition: Interim Program Review (IPR) FY21	1	2021	1	2021
Acquisition: Interim Program Review (IPR) FY22	1	2022	1	2022
Acquisition: Interim Program Review (IPR) FY23	1	2023	1	2023
Contracting: Block 4 Phase I	1	2017	2	2018
Contracting: Block 4 Phase II	2	2018	4	2023
Systems Engineering: 4.1 Initial Preliminary Design Review (PDR)	2	2019	2	2019
Systems Engineering: 4.2 Initial Preliminary Design Review (PDR)	3	2020	3	2020
Systems Engineering: 4.1 Initial System Requirements Review (SRR)	1	2017	1	2017
Systems Engineering: 4.1 Initial System Functional Review (SFR)	1	2018	1	2018
Systems Engineering: 4.2 Initial System Requirements Review (SRR)	4	2019	4	2019
Test & Evaluation: 4.1 Test	4	2019	4	2020
Test & Evaluation: 4.2 Test	2	2021	4	2022
Fielding: Block 4.1 Fleet Availability	1	2021	1	2021
Fielding: Block 4.2 Fleet Availability	1	2023	1	2023

Note
Schedule details reflect fiscal years

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
676011: JSF DUAL CAPABLE AIRCRAFT	21.926	25.743	35.122	77.434	0.000	77.434	91.339	94.329	37.328	11.643	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

F-35 C2D2 Includes:

USAF PE 0207142F BPAC 675346

FY13: USN PE 0604800N Project Unit 2261

FY14: USN PE 0604800N Project Unit 9999

FY15-18: USN PE 0604810N Project Unit 2936

FY19: USN PE 0604840N Project Unit 2936

FY13: USMC PE 0604800M Project Unit 2262

FY14: USMC PE 0604800M Project Unit 9999

FY15-18: USMC PE 0604810M Project Unit 2935

FY19: USMC PE 0604840M Project Unit 3410

International Partner Contributions

F-35 DCA Includes:

USAF PE 0207142F BPAC 676011

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.

Additionally, the F-35 Joint Strike Fighter (JSF) Operational Requirements Document (ORD) calls for the F-35A variant to have the capabilities and provisions for Dual Capable Aircraft (DCA) operations in the first post SDD block upgrade. DCA refers to the capability to carry and deliver conventional and non-conventional weapons. DCA operation for the F-35A is internal carriage of either one or two B-61-12 weapons.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Dual Capable Aircraft (DCA)(F-35 JSF)	25.743	35.122	77.434	-	77.434

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: This effort provides for the assessment of Dual-Capable Aircraft (DCA) weapon integration and certification impacts on the Joint Strike Fighter (JSF) aircraft. It identifies and mitigates potential technical and cost risks, as well as defines the integration and certification trade-space to field the DCA capability with the B61-12 weapon. This effort also supports follow-on risk reduction efforts that will ensure future integration alignment with the earliest feasible post-SDD block upgrade, and is expected to include full integration efforts pending Service decisions.</p> <p>FY 2018 Plans: Complete Static Ejection and Wind Tunnel Tests for initial Separation Analysis. Perform additional data analysis to support Block 4 System Functional Review and Preliminary Design Review. F-35A is an objective platform and maintains responsibility for integration/certification costs of the B61-12; as such, the program will continue to resource planning and execution for integration/certification of B61-12 on F-35A. Complete preliminary design reports, nuclear safety evaluation plans, and nuclear analysis reports. Conduct sub-block 4.1 System Functional Review (SFR).</p> <p>FY 2019 Base Plans: Continue execution of the Phase 2 Block 4 contract executing: Early DCA Software Development and resource recovery, Development of the Preliminary EICD and MICD, continued NSAR and PDR development, IV&V Plan Development Survivability Analysis, FRIU upgrade development and production, Wiring Mods for additional Mission Select Switch and Nuclear Consent Switch, DT aircraft Mod Kits. Conduct early flight science testing of B61-12 (i.e. Environmental, Loads and separation testing and analysis). F-35A is an objective platform and maintains responsibility for integration/certification costs of the B61-12; as such, the program will continue to resource planning and execution for integration/certification of B61-12 on F-35A.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$42.312M; see above for details.</p>					
Accomplishments/Planned Programs Subtotals	25.743	35.122	77.434	-	77.434

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 07 PE 0207142F 5346: JSF Follow on Modernization, BPAC 675346	48.162	299.408	472.067	-	472.067	507.159	415.855	278.532	281.315	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 05 PE 0604810N 2936: F-35C Follow on Modernization (CV)	25.041	143.855	-	-	-	-	-	-	-	0.000	168.896
• RDTE 07 PE 0604840N 2936: F-35C Follow on Modernization (CV)	-	-	252.360	-	252.360	223.901	184.210	117.189	119.602	Continuing	Continuing
• RDTE 05 PE 0604810M 2935: F-35B Follow-on Modernization (STOVL)	29.691	144.958	-	-	-	-	-	-	-	0.000	174.649
• RDTE 07 PE 0604840M 3410: F-35B Follow-on Modernization (STOVL)	-	-	259.122	-	259.122	228.719	189.038	122.592	125.044	Continuing	Continuing
• International: <i>International FOM</i>	65.008	150.168	158.352	-	158.352	160.705	166.023	158.811	158.811	Continuing	Continuing

Remarks

D. Acquisition Strategy

The DCA effort will leverage contracting vehicles for the overall Block 4 F-35 C2D2 effort. 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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Block 4 Phase 1 - DCA Requirements Decomposition	SS/CPFF	Lockheed Martin : Ft. Worth, TX	19.654	9.000	Sep 2017	5.100	Feb 2018	2.950	Dec 2018	-		2.950	Continuing	Continuing	-
Block 4 Phase 2.1 - DCA to PDR	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	10.675	Nov 2017	12.072	Feb 2018	15.752	Feb 2019	-		15.752	Continuing	Continuing	-
Block 4 Phase 2.3 - DCA to DT Complete	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	-		6.000	Jun 2018	29.650	Feb 2019	-		29.650	Continuing	Continuing	-
Prior Year - no longer funded in FYDP	Various	Not specified. : TBD	0.948	-		-		-		-		-	0.000	0.948	-
Subtotal			20.602	19.675		23.172		48.352		-		48.352	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
B61-12/F-35 Certification	Various	Various : TBD	0.500	4.688	Aug 2017	8.950	Feb 2018	25.350	Feb 2019	-		25.350	Continuing	Continuing	-
Tail-kit Program Office	MIPR	TKA SPO : Eglin AFB, FL	-	0.020	Feb 2018	3.000	Feb 2018	2.350	Dec 2018	-		2.350	Continuing	Continuing	-
AFNWC/AFSEC Support	MIPR	Various : TBD	-	1.360	Jan 2018	-		1.382	Feb 2018	-		1.382	Continuing	Continuing	-
Subtotal			0.500	6.068		11.950		29.082		-		29.082	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year - no longer funded in FYDP	Various	Not specified. : TBD	0.824	-		-		-		-		-	0.000	0.824	-
Subtotal			0.824	-		-		-		-		-	0.000	0.824	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT
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	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.926	25.743	35.122	77.434	-	77.434	Continuing	Continuing	N/A

Remarks
 F-35 C2D2 Includes:
 USAF PE 0207142F BPAC 675346
 FY13: USN PE 0604800N Project Unit 2261
 FY14: USN PE 0604800N Project Unit 9999
 FY15-18: USN PE 0604810N Project Unit 2936
 FY19: USN PE 0604840N Project Unit 2936
 FY13: USMC PE 0604800M Project Unit 2262
 FY14: USMC PE 0604800M Project Unit 9999
 FY15-18: USMC PE 0604810M Project Unit 2935
 FY19: USMC PE 0604840M Project Unit 3410
 International Partner Contributions

F-35 DCA Includes:
 USAF PE 0207142F BPAC 676011

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / F-35 Squadrons	Project (Number/Name) 676011 / JSF DUAL CAPABLE AIRCRAFT
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

676011: JSF Dual Capable Aircraft	
DCA Risk Reduction - B61/12 Development	
Nuclear Certification - NNSA & TKA SPO	
Phase 1 (Nuclear Certification Tasks) Requirements Decomposition	
Phase 2.1 (Nuclear Certification Tasks) DCA to Preliminary Design Review (PDR)	
Phase 2.3 (Nuclear Certification Tasks) DCA to DT Complete	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207142F / <i>F-35 Squadrons</i>	Project (Number/Name) 676011 / <i>JSF DUAL CAPABLE AIRCRAFT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
676011: JSF Dual Capable Aircraft				
DCA Risk Reduction - B61/12 Development	1	2017	4	2017
Nuclear Certification - NNSA & TKA SPO	1	2017	4	2023
Phase 1 (Nuclear Certification Tasks) Requirements Decomposition	1	2017	2	2019
Phase 2.1 (Nuclear Certification Tasks) DCA to Preliminary Design Review (PDR)	1	2018	4	2021
Phase 2.3 (Nuclear Certification Tasks) DCA to DT Complete	3	2018	4	2023

Note

Schedule details reflect fiscal years