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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604800M / <i>Joint Strike Fighter (JSF) - EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	51,169.416	0.539	0.577	0.611	-	0.611	0.625	0.636	0.649	0.659	0.000	51,173.712
2262: <i>Joint Strike Fighter EMD STOVL</i>	51,169.416	0.539	0.577	0.611	-	0.611	0.625	0.636	0.649	0.659	0.000	51,173.712

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 USN, USAF, USMC and allies. The three variants are the F-35A Conventional Takeoff and Landing; F-35B Short Takeoff and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funded a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USMC, and USAF use.

The remaining funds each year for the next several years are required to support contract closeout which generally includes invoicing reconciliation, unpaid fees LM has in Claims/REAs, etc which in the case of SDD could go well above the budget. Cuts or zeroing out the out years will only force the Services to pay the closeout costs.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under System Development and Demonstration because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.561	0.577	0.000	-	0.000
Current President's Budget	0.539	0.577	0.611	-	0.611
Total Adjustments	-0.022	0.000	0.611	-	0.611
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.022	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	0.611	-	0.611

Change Summary Explanation

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

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD				Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2262: Joint Strike Fighter EMD STOVL	51,169.416	0.539	0.577	0.611	-	0.611	0.625	0.636	0.649	0.659	0.000	51,173.712
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 198												

Note

Beginning in FY2022, the JSF EMD (Project Unit 2262) budget is service specific with the following services removed:

USAF PE 0604800F BPAC 653831

USN PE 0604800N Project Unit 2261

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 USN, USAF, USMC and allies. The three variants are the F-35A Conventional Takeoff and Landing; F-35B Short Takeoff and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The System Development and Demonstration (SDD) budget funded a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USMC and USAF use.

The remaining funds each year for the next several years are required to support contract closeout which generally includes invoicing reconciliation, unpaid fees LM has in Claims/REAs, etc which in the case of SDD could go well above the budget. Cuts or zeroing out the out years will only force the Services to pay the closeout costs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: System Development and Demonstration (SDD)	0.539	0.577	0.611	0.000	0.611
Articles:	-	-	-	-	-
Description: SDD execution of the Air System (Lockheed Martin) including International Commonality Efforts; includes airframe, vehicle and mission systems, autonomic logistics, systems engineering & test efforts.					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Continue SDD execution of Air System (Lockheed Martin), including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC. Continue to conduct SDD closure activities including FCA/PCA (Functional Configuration Audit/Production Configuration Audit) in order to establish production specification and transition to post-SDD, production and sustainment.					
FY 2023 Base Plans: Continue SDD execution of Air System (Lockheed Martin), including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC. Continue to conduct SDD closure activities including FCA/PCA (Functional Configuration Audit/Production Configuration Audit) in order to establish production specification and transition to post-SDD, production and sustainment.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The increase of \$0.034 from FY2022 to FY2023 is to compensate for normal inflation.					
Accomplishments/Planned Programs Subtotals	0.539	0.577	0.611	0.000	0.611

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDT&E/0604800F: F-35A Joint Strike Fighter SDD	5.423	0.013	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	22,333.771
• RDT&E/0604800N: F-35C JT Strike Fighter (JSF) - EMD	0.240	0.262	0.234	-	0.234	0.235	0.235	0.237	0.241	0.000	51,170.873
• APN/0605B: F-35B Joint Strike Fighter STOVL Spares	194.608	126.970	136.770	-	136.770	74.496	75.957	0.000	0.000	3,363.198	4,360.631
• APN/0605C: F-35C Joint Strike Fighter CV Spares	112.265	221.402	93.971	-	93.971	98.303	125.515	0.000	0.000	Continuing	Continuing
• APN/0592: F-35B STOVL Series	131.797	161.776	216.356	-	216.356	309.125	300.698	411.864	412.879	699.240	3,349.970
• APN/0593: F-35C CV Series	86.740	118.933	208.336	-	208.336	180.187	183.851	192.161	196.078	455.354	1,821.825

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• APN/0147C: F-35C <i>Joint Strike Fighter CV AP</i>	326.147	185.695	387.596	-	387.596	315.866	147.980	134.833	149.232	474.607	4,263.503
• APN/0147: F-35C <i>Joint Strike Fighter CV</i>	3,030.327	2,369.128	1,953.676	-	1,953.676	2,450.306	2,331.142	2,450.161	2,333.857	15,155.057	53,815.643
• APN/0152C: F-35B Joint <i>Strike Fighter STOVL AP</i>	303.035	216.814	200.118	-	200.118	201.313	202.696	254.742	326.430	1,256.086	5,303.958
• APN/0152: F-35B Joint <i>Strike Fighter STOVL</i>	1,387.384	2,450.068	2,210.949	-	2,210.949	2,254.612	2,332.943	2,195.422	2,375.231	14,726.526	48,471.881
• C2D2 International: <i>International Continuous Capability Development and Delivery</i>	359.626	285.969	211.292	-	211.292	208.053	177.542	0.000	0.000	Continuing	Continuing
• RDT&E/0604840N: F-35C C2D2	377.005	486.962	491.513	-	491.513	386.118	324.490	295.983	300.659	Continuing	Continuing
• RDT&E/0604840M: F-35B C2D2	378.495	515.746	525.338	-	525.338	409.610	349.243	316.760	321.569	Continuing	Continuing
• 0604840F F-35A C2D2: <i>USAF Continuous Capability Development and Delivery</i>	785.336	549.279	450.915	-	450.915	521.012	586.709	0.000	0.000	Continuing	Continuing

Remarks

This is a joint program with no executive service. Service Acquisition Execution (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Air Force.

Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to 2002.

The United Kingdom, Italy, Netherlands, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC procurement lines include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all services are reflected in separate lines. International Partner Funding also includes funds provided under the Italy and Netherlands Bilateral agreements.

RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950.617M; USAF PE 0603800F \$1,907.352M; DARPA PE 0603800E \$118.056M; and International Partner contributions of \$253.921M for a total of \$4,229.946M.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL

D. Acquisition Strategy

The SDD program consists of a cost-reimbursement contract awarded to Lockheed Martin Aeronautics Company to develop the F-35 Air System, consisting of three aircraft variants and its associated logistics support system, for the U.S. Services and international participants. Similarly, a cost-reimbursement contract was awarded to Pratt & Whitney to develop the F135 propulsion system. Ground and flight testing will be conducted during development to accomplish validation and verification, with the extensive use of modeling and simulation to offset the risk of this large, complex, and concurrent lifecycle program. A comprehensive logistics support environment, including an integrated training system for aircrew, maintenance, and support personnel, is also being developed.

On 25 April 2011, the Department of Defense terminated the development of the General Electric Rolls-Royce Fighter Engine Team F136 propulsion system.

The F-35 Program has made international involvement a key element of the acquisition strategy. This includes international partnership in the development, production, and sustainment phases of the lifecycle. Additional international participation includes Foreign Military Sales arrangements.

In Fiscal Year 2007, separate cost-type contracts were awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney to begin low rate initial production for F-35 air vehicles, propulsion systems, and sustainment for the fielded systems. Transition to fixed-price-type procurement contracts occurred with the fourth low rate lot. To provide logistics support for delivered aircraft, Performance-Based Logistics cost-type contracts will be awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney.

At the completion of Low Rate Initial Production, a Defense Acquisition Board review, and Milestone Decision Authority approval, the F-35 Program will enter Full Rate Production. Fixed-price procurement contracts will be awarded for F-35 air vehicles and propulsion systems for the U.S. Services and international participants. Multiyear procurement authority for the F-35 Air System will be requested for Full Rate Production. Concurrently, a fixed-price-type Performance Based Logistics contracts for sustainment will be requested to support multi-Service and multi-national requirements.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
1319 / 5				PE 0604800M / Joint Strike Fighter (JSF) - EMD						2262 / Joint Strike Fighter EMD STOVL					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Primary Hardware Development - SDD	C/CPIF	Lockheed Martin : Ft. Worth, TX	32,474.752	0.539	Dec 2020	0.577	Dec 2021	0.611	Dec 2022	-		0.611	3.419	32,479.898	32,495.150
Prior Year No Longer Funded in FYDP	Various	Various : Various	13,965.497	0.000		0.000		0.000		-		0.000	0.000	13,965.497	-
Subtotal			46,440.249	0.539		0.577		0.611		-		0.611	3.419	46,445.395	N/A
Remarks															
Contract type prior to 2013 was CPAF.															
Cumulative Award Fee earned in prior years for Lockheed Martin is 97%.															
Cumulative Award earned in prior years for Pratt and Whitney is 98%.															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Prior Year No Longer Funded in FYDP	Various	Various : Various	1,394.817	0.000		0.000		0.000		-		0.000	0.000	1,394.817	-
Subtotal			1,394.817	0.000		0.000		0.000		-		0.000	0.000	1,394.817	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Prior Year No Longer Funded in FYDP	Various	Various : Various	2,420.240	0.000		0.000		0.000		-		0.000	0.000	2,420.240	-
Subtotal			2,420.240	0.000		0.000		0.000		-		0.000	0.000	2,420.240	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	Various : Various	914.110	0.000		0.000		0.000		-		0.000	0.000	914.110	-
Subtotal			914.110	0.000		0.000		0.000		-		0.000	0.000	914.110	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		51,169.416	0.539	0.577	0.611	-	0.611	3.419	51,174.562	N/A

Remarks
 Subtotals and totals may not add due to rounding.

JSF EMD Includes:
 USAF PE 0604800F BPAC 653831
 USN PE 0604800N Project Unit 2261
 USMC PE 0604800M Project Unit 2262

D&S Includes:
 USAF PE 0604800F BPAC 653832
 USN PE 0604800N Project Unit 3352
 USMC PE 0604800M Project Unit 3350

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL
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JSF Variants - CV, STOVL & CTOL	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Defense Acquisition Reviews	IPR ■				IPR ■																											
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft)		LOT 15 (CTOL 60, CV 26, STOVL 10) ●				LOT 16 (CTOL 48, CV 20, STOVL 17) ●				LOT 17 (CTOL 48, CV 19, STOVL 15) ●				LOT 18 (CTOL 48, CV 19, STOVL 16) ●				LOT 19 (CTOL 48, CV 19, STOVL 16) ●				LOT 20 (CTOL 60, CV 19, STOVL 16) ●				LOT 20 (CTOL 60, CV 18, STOVL 17) ●						

2023DON - 0604800M - 2262

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / Joint Strike Fighter (JSF) - EMD	Project (Number/Name) 2262 / Joint Strike Fighter EMD STOVL

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JSF Variants - CV, STOVL & CTOL				
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-20	1	2021	1	2021
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-21	1	2022	1	2022
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
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 20 Full Funding / Production / Delivery	2	2026	2	2026
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 21 Full Funding / Production / Delivery	2	2027	2	2027