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

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD
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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	0.000	5.214	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.214
653831: <i>Joint Strike Fighter</i>	0.000	5.214	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.214

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 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 United Kingdom, Italy, Netherlands, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

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 funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

- FY07: 1 F-35A flight test article
- FY08: 1 F-35B flight test article; 1 F-35B ground test article
- FY09: 1 F-35B flight test article; 2 F-35A ground test articles
- FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
- FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
- FY13: 1 F-35C flight test article

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 \$0 was expended for civilian pay expenses in this program element, and in FY22 \$0 is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604800F / <i>F-35 - EMD</i>
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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	5.413	0.000	0.000	0.000	0.000
Current President's Budget	5.214	0.000	0.000	0.000	0.000
Total Adjustments	-0.199	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	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	0.000	0.000			
• Other Adjustments	-0.199	0.000	0.000	0.000	0.000

Change Summary Explanation

No significant changes.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force										Date: April 2022		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD				Project (Number/Name) 653831 / Joint Strike Fighter			
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
653831: <i>Joint Strike Fighter</i>	0.000	5.214	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.214
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost for the United States Air Force (USAF) funding are: FY21 \$5.214M, FY22 \$0.000M, and FY23 \$0.000M. R-2 data reflects variant unique funding only.

R-2A(section B)/R-3 displays USAF funding only.

F-35 EMD Includes:

USAF PE 0604800F BPAC 653831

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 United Kingdom, Italy, Netherlands, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

The top-line Program Element reflects the unique variant for each Service. 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 funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

FY07: 1 F-35A flight test article

FY08: 1 F-35B flight test article; 1 F-35B ground test article

FY09: 1 F-35B flight test article; 2 F-35A ground test articles

FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C

FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C

FY13: 1 F-35C flight test article

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Title: System Development and Demonstration (SDD) (F-35 JSF)</p> <p>Description: SDD execution of the Air System with Lockheed Martin, including International Commonality Effort which includes airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts.</p> <p>FY 2022 Plans: Continue SDD execution of Air System with 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.</p> <p>FY 2023 Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>		5.214	0.000	0.000
<p>Title: Test and Evaluation (T&E) (F-35 JSF)</p> <p>Description: Government-executed Initial Operational Test & Evaluation (IOT&E) activities. Elements of IOT&E include preparation, execution, & evaluation of flight and ground based tests which assess all aspects (lethality, mission effectiveness, cyber security) of the F-35 Air System in an operationally relevant environment.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>		0.000	0.000	0.000
<p>Title: Development Support (F-35 JSF)</p> <p>Description: SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.</p> <p>FY 2022 Plans:</p>		0.000	0.000	0.000

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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
N/A			
FY 2023 Plans: N/A			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	5.214	0.000	0.000
Other Service Funding Adjustment	0.000	0.000	-
Air Force Subtotals	5.214	0.000	0.000

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDTE 05 0604800N 2261: JSF SDD (CV)	0.240	0.262	0.234	-	0.234	0.235	0.235	0.237	0.241	0.000	1.684
• RDTE 05 0604800N 2262: JSF SDD (STOVL)	0.539	0.577	0.611	-	0.611	0.625	0.636	0.649	0.659	0.000	4.296

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 Navy.

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.

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.

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force	Date: April 2022
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / <i>F-35 - EMD</i>	Project (Number/Name) 653831 / <i>Joint Strike Fighter</i>
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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 (FY) 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, multiple-year, 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 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Product Development (\$ 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			
Product Development	C/CPAF	Not specified. : TBD	0.000	0.000		-		-		-		-	0.000	0.000	0.000
Lockheed Martin - SDD	SS/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	5.214	Dec 2020	-		-		-		-	0.000	5.214	32,495.150
Lockheed Martin - SDD Fee	SS/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		-		-		-		-	0.000	0.000	1,754.193
Prior Year No Longer Funded in FYDP	Various	Various : TBD	0.000	0.000		-		-		-		-	0.000	0.000	0.000
Subtotal			0.000	5.214		-		-		-		-	0.000	5.214	N/A

Remarks
 Contract type prior to 2013 was CPAF.
 Cumulative Award Fee earned in prior years for Lockheed Martin is 97%.
 Cumulative Award Fee earned in prior years for Pratt and Whitney is 98%.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	0.000	5.214	-	-	-	-	0.000	5.214	N/A
Other Service Funding Adjustment	-	0.000	0.000	-	-	-			-
Project Cost Totals	0.000	5.214	-	-	-	-	0.000	5.214	-

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.

NOTE 1: Prior Years reflect \$22,320.707M USAF
 FY 2021 reflects \$ 5.214M USAF
 FY 2022 and beyond reflects \$ 0.000M USAF

JSF EMD Includes:
 USAF PE 0604800F BPAC 653831

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

JSF Variants - CV, STOVL & CTOL	
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21	■
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY22	■
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 15 Full Funding / Production / Delivery	■■■■
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 16 Full Funding / Production / Delivery	■■■■■

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>JSF Variants - CV, STOVL & CTOL</i>				
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21	1	2021	1	2021
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY22	1	2022	1	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 15 Full Funding / Production / Delivery	2	2021	1	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 16 Full Funding / Production / Delivery	2	2022	4	2023

Note

Schedule details reflect fiscal years