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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	7.420	5.413	0.000	0.000	0.000	-	-	-	-	-	-
653831: <i>Joint Strike Fighter</i>	0.000	7.420	5.413	0.000	0.000	0.000	-	-	-	-	-	-

**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 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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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / <i>F-35 - EMD</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	7.628	5.423	0.000	0.000	0.000
Current President's Budget	7.420	5.413	0.000	0.000	0.000
Total Adjustments	-0.208	-0.010	0.000	0.000	0.000
• Congressional General Reductions	0.000	-0.010			
• 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	-0.208	0.000	0.000	0.000	0.000

**Change Summary Explanation**

No significant Changes

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD				<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
653831: <i>Joint Strike Fighter</i>	0.000	7.420	5.413	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**Note**

Total cost for the United States Air Force (USAF) funding are: FY20 \$7.417M, FY21 \$5.413M, and FY22 \$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

D&S Includes:

USAF PE 0604800F BPAC 653832

**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



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>Title:</b> Development Support (F-35 JSF)	0.000	0.000	0.000	0.000	0.000
<b>Description:</b> SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	7.420	5.413	0.000	0.000	0.000
Other Service Funding Adjustment	0.000	0.000	0.000	0.000	0.000
<b>Air Force Subtotals</b>	7.420	5.413	0.000	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RDTE 05 0604800N 2261: JSF SDD (CV)	1.481	0.250	0.263	-	0.263	-	-	-	-	-	-
• RDTE 05 0604800N 2262: JSF SDD (STOVL)	1.710	0.561	0.580	-	0.580	-	-	-	-	-	-

**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.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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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.

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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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD					<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter				

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Product Development	C/CPAF	Not specified. : TBD	0.000	0.000		0.000		0.000		0.000		0.000	-	-	0.000
Lockheed Martin - SDD	SS/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	7.420	Dec 2019	5.413	Dec 2020	0.000	Dec 2021	0.000	Dec 2021	0.000	-	-	32,495.150
Lockheed Martin - SDD Fee	SS/CPIF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		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		0.000	-	-	0.000
<b>Subtotal</b>			0.000	7.420		5.413		0.000		0.000		0.000	-	-	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%.

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Subtotals</b>	0.000	7.420	5.413	0.000	0.000	0.000	-	-	N/A
Other Service Funding Adjustment	-	0.000	0.000	0.000	0.000	0.000			-
<b>Project Cost Totals</b>	0.000	7.420	5.413	0.000	0.000	0.000	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.

NOTE 1: Prior Years reflect \$22,320.707M USAF  
 FY 2020 reflects \$ 7.420M USAF  
 FY 2021 reflects \$ 5.413M USAF  
 FY 2022 reflects \$ 0.000M USAF

JSF EMD Includes:  
 USAF PE 0604800F BPAC 653831

D&S Includes:  
 USAF PE 0604800F BPAC 653832

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
<b>JSF Variants - CV, STOVL &amp; CTOL</b>																												
Acquisition Milestones: F-35C Initial Operational Capability																												
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 13 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 14 Full Funding / Production / Delivery																												
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-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	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				
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 17 Full Funding / Production / Delivery																																
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 18 Full Funding / Production / Delivery																																
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 19 Full Funding / Production / Delivery																																
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 20 Full Funding / Production / Delivery																																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>JSF Variants - CV, STOVL &amp; CTOL</i></b>				
Acquisition Milestones: F-35C Initial Operational Capability	2	2020	2	2021
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	1	2020	4	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18	1	2020	1	2021
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19	1	2020	1	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20	1	2021	1	2021
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21	1	2022	1	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 13 Full Funding / Production / Delivery	2	2020	1	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 14 Full Funding / Production / Delivery	2	2020	1	2021
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
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 17 Full Funding / Production / Delivery	2	2023	4	2024
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 18 Full Funding / Production / Delivery	2	2024	4	2025
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 19 Full Funding / Production / Delivery	2	2025	4	2025

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604800F / F-35 - EMD	<b>Project (Number/Name)</b> 653831 / Joint Strike Fighter
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<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LOT 20 Full Funding / Production / Delivery	2	2026	4	2026

**Note**  
Schedule details reflect fiscal years