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PE NUMBER: 0604800F
 PE TITLE: Joint Strike Fighter EMD

Exhibit R-2, RDT&E Budget Item Justification								DATE February 2004	
BUDGET ACTIVITY 05 System Development and Demonstration (SDD)				PE NUMBER AND TITLE 0604800F Joint Strike Fighter EMD					
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	1,612.826	2,092.547	2,307.420	2,489.848	2,203.446	2,051.881	1,686.684	Continuing	TBD
3831 Joint Strike Fighter	1,612.826	2,092.547	2,307.420	2,489.848	2,203.446	2,051.881	1,686.684	Continuing	TBD

THIS PROGRAM ELEMENT (PE) CONTINUES DEVELOPMENT EFFORTS BUDGETED IN PE 0603800F PRIOR TO FISCAL YEAR 2002.

(U) **A. Mission Description and Budget Item Justification**

The Joint Strike Fighter (JSF) program will develop and field a family of aircraft that meets the need of the USN, USAF, USMC and allies with maximum commonality among the variants, consistent with National Disclosure Policy (NDP), to minimize life cycle costs. This is a joint program with no executive service. Navy and Air Force each provide approximately equal shares of annual funding to the program. The United Kingdom and 7 other International countries are participants in the JSF program.

This program is funded under System Development and Demonstration (SDD) because it encompasses system development and demonstration of new end items prior to a production approval decision.

Quantity of 14 AF and DoN RDT&E articles (6 in FY 2006, 8 in FY 2007) reflects flight test articles; 8 ground test articles are also budgeted in SDD.

(U) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Previous President's Budget	1,697.810	2,194.087	2,242.485
(U) Current PBR/President's Budget	1,612.826	2,092.547	2,307.420
(U) Total Adjustments	-84.984	-101.540	
(U) Congressional Program Reductions		-55.000	
Congressional Rescissions		-18.202	
Congressional Increases			
Reprogrammings	-33.006	-28.338	
SBIR/STTR Transfer	-51.978		

(U) **Significant Program Changes:**

Schedule: Approximate 1-year schedule extension is expected.

Technical: Additional design work is required to overcome airframe structural issues.

Exhibit R-2a, RDT&E Project Justification

DATE
February 2004

BUDGET ACTIVITY 05 System Development and Demonstration (SDD)				PE NUMBER AND TITLE 0604800F Joint Strike Fighter EMD			PROJECT NUMBER AND TITLE 3831 Joint Strike Fighter			
Cost (\$ in Millions)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
3831	Joint Strike Fighter	1,612.826	2,092.547	2,307.420	2,489.848	2,203.446	2,051.881	1,686.684	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

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(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) FY02 commenced execution of System Development and Demonstration (SDD) for Air System with Lockheed Martin including International Commonality Effort (ICE). FY03, FY04 and FY05 will continue SDD execution of the Air System including airframe, vehicle systems, mission systems, autonomic logistics, systems engineering and integrated test efforts.	2,478.456	3,686.640	3,859.000
(U) FY02 commenced execution of System Development and Demonstration (SDD) for F135 Propulsion System with Pratt & Whitney including International Commonality Effort (ICE). FY03, FY04 and FY05 continue SDD execution of the F135 Propulsion System, including engine testing, autonomic logistics, integration, and performing technology maturation efforts.	833.127	694.114	921.000
(U) FY02, FY03, FY04, and FY05 continue the General Electric F136 development for a second, interchangeable, JSF engine for competition in production (previously begun in associated program elements 0603800F and 0603800N). Efforts include technology maturation, engine testing, autonomic logistics and integration.	220.817	123.632	233.000
(U) FY02 commenced SDD Systems Engineering (SE) and Mission Support activities, including modeling, simulation and analysis (MS&A) efforts, risk reduction activities and program office functions. FY03, FY04, and FY05 continue SE and Mission Support activities, including MS&A, risk reduction, Government verification and test, non-test systems engineering and technical support and program office functions.	167.705	269.128	315.277
(U) Total Cost	3,700.105	4,773.514	5,328.277

Exhibit R-2a, RDT&E Project Justification

DATE

February 2004

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE
05 System Development and Demonstration (SDD)	0604800F Joint Strike Fighter EMD	3831 Joint Strike Fighter

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

(U) TURKEY	25.700	28.700	31.200	31.000	22.100	11.900	6.500	Continuing	TBD
(U) AUSTRALIA	14.950	28.150	39.720	29.740	14.430	8.010	5.000	Continuing	TBD
(U) Other APPN									
(U) USAF 0207142F PROCUREMENT				173.377	1165.341	1232.999	2241.388	Continuing	TBD
(U) USN 0204146N PROCUREMENT				61.564	680.509	2715.237	4791.696	Continuing	TBD
(U) Other Program Funding									
(U) USAF 0207142F MILCON		19.060	9.965	0.000	0.000	85.402	79.998	Continuing	TBD
(U) USAF 91211F MILCON		1.000	0.900					Continuing	TBD
(U) USN 24146N MILCON		24.370						Continuing	TBD
(U) USN Spares and Repair Parts				0.000	30.754	150.527	342.425	Continuing	TBD

Note: This is a joint program with no executive service. Program Element 0604800N continues USN development efforts budgeted in 0603800N prior to FY 2002. The United Kingdom and other International countries are participants in the SDD phase of JSF.

RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950,617; USAF PE 0603800F \$1,907,352; DARPA PE 0603800E \$118,006; UK \$201,221; Multi-Lateral \$32,100; Canada \$10,600; and Italy \$10,000 for a total of \$4,229,896.

(U) D. Acquisition Strategy

Activities in the prior phase of JSF centered around three distinct objectives to provide a sound foundation for the start of System Development & Demonstration (SDD) in Fall 2001:

- (1) facilitated the Services' development of fully validated, affordable operational requirements;
- (2) lowered risk by investing in and demonstrating key leveraging technologies that lowered the cost of development, production and ownership; and
- (3) demonstrated operational concepts.

Early warfighter and technologist interaction was an essential aspect of the requirements definition process, and achieved JSF affordability goals. To an unprecedented degree, the JSF Program used cost-performance trades early, as an integral part of the weapon system development process. The Services defined requirements through an iterative process, balancing weapon system capability against life cycle cost at every stage. Each iteration of the requirements was provided to industry. They evolved their designs and provided cost data back to the warfighters. The warfighters evaluated trades and made decisions for the next iteration. This iterative process produced iterations of the Services' Joint Interim Requirements Documents in 1995, 1997, 1998 and culminated in the approved joint Operational Requirements Document (ORD) in FY 2000.

A sizable technology maturation effort was conducted to reduce risk and life cycle cost (LCC) through technology maturation and demonstrations. The primary emphasis was on technologies identified as high payoff contributors to affordability, supportability, survivability and lethality. Numerous demonstrations were accomplished to

UNCLASSIFIED

Exhibit R-2a, RDT&E Project Justification

DATE

February 2004

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604800F Joint Strike Fighter EMD

PROJECT NUMBER AND TITLE

3831 Joint Strike Fighter

validate performance and life cycle cost impact to component, subsystem and the total system.

In November 1996, contracts were awarded to Boeing and Lockheed Martin for Concept Demonstration Programs. These competing contractors built and flew concept demonstrator aircraft, conducted concept unique ground demonstrations, and refined their respective weapon system concepts. Specifically, Boeing and Lockheed Martin demonstrated commonality and modularity, Short Take Off/ Vertical Land (STOVL) hover and transition, and low speed handling qualities of their respective weapon system concepts. Pratt and Whitney provided propulsion hardware and engineering support. General Electric continued development of a second, interchangeable engine for competition in production.

Following evaluation of proposals and a favorable Milestone B decision, the JSF Program entered SDD on 26 October 2001 with SDD contract awards to Lockheed Martin and Pratt & Whitney. The SDD plan reflects a block approach, based on open systems architecture, for accomplishing aircraft and weapons integration. General Electric continues propulsion development efforts.

Procurement is planned to begin in FY 2007 with advance procurement for Lot 1 in FY 2006.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis

DATE

February 2004

BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE				
05 System Development and Demonstration (SDD)				0604800F Joint Strike Fighter EMD				3831 Joint Strike Fighter				
<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
<u>(U) Product Development</u>												
Lockheed Martin	C/CPAF	Ft. Worth, TX	851.537	2,478.4 56	Oct-02	3,686.6 40	Oct-03	3,859.0 00	Oct-04	Continuing	TBD	19,645.4 66
Pratt & Whitney	SS/CPAF	Hartford, CT	771.554	833.127	Oct-02	694.114	Oct-03	921.000	Oct-04	Continuing	TBD	4,827.78 5
General Electric	SS/CPAF	Cincinnati, OH	26.921	220.817	Oct-02	123.632	Oct-03	233.000	Oct-04	Continuing	TBD	453.497
Subtotal Product Development			1,650.012	3,532.4 00		4,504.3 86		5,013.0 00		Continuing	TBD	24,926.7 48
Remarks:	Dec 2002 SAR reflected total SDD cost of \$33B; current estimate TBD pending approval of revised Acquisition Program Baseline and Dec 2003 SAR. The GE Target Value of Contract reflects the negotiated value of the current Phase IIIb; follow-on contract for continued GE F136 development is TBD.											
<u>(U) Support</u>												
System Eng/Mission Support	Various	Field Sites	79.778	139.391	Oct-02	236.127	Oct-03	285.934	Oct-04	Continuing	TBD	
Sverdrup/Anteon	C/CPAF	Arlington, VA	3.150	4.975	Dec-02	5.224	Dec-03	5.278	Dec-04	Continuing	TBD	
LSI/Veridian	SS/CPFF	Patuxent River, MD	5.256	6.809	Dec-02	7.055	Dec-03	7.127	Dec-04	Continuing	TBD	
Miscellaneous	Various	Miscellaneous	5.775	5.255	Oct-02	5.200	Oct-03	5.400	Oct-04	Continuing	TBD	
Subtotal Support			93.959	156.430		253.606		303.739		Continuing	TBD	0.000
Remarks:												
<u>(U) Test & Evaluation</u>												
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
<u>(U) Management</u>												
Stanley	SS/CPFF	Arlington, VA	3.834	8.955	Oct-02	12.211	Oct-03	9.076	Oct-04	Continuing	TBD	
Aegis	SS/CPFF	Arlington, VA	1.541	2.320	Dec-02	3.311	Dec-03	2.462	Dec-04	Continuing	TBD	
Subtotal Management			5.375	11.275		15.522		11.538		Continuing	TBD	0.000
Remarks:												
<u>(U) Total Cost</u>			1,749.346	3,700.1 05		4,773.5 14		5,328.2 77		Continuing	TBD	24,926.7 48

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

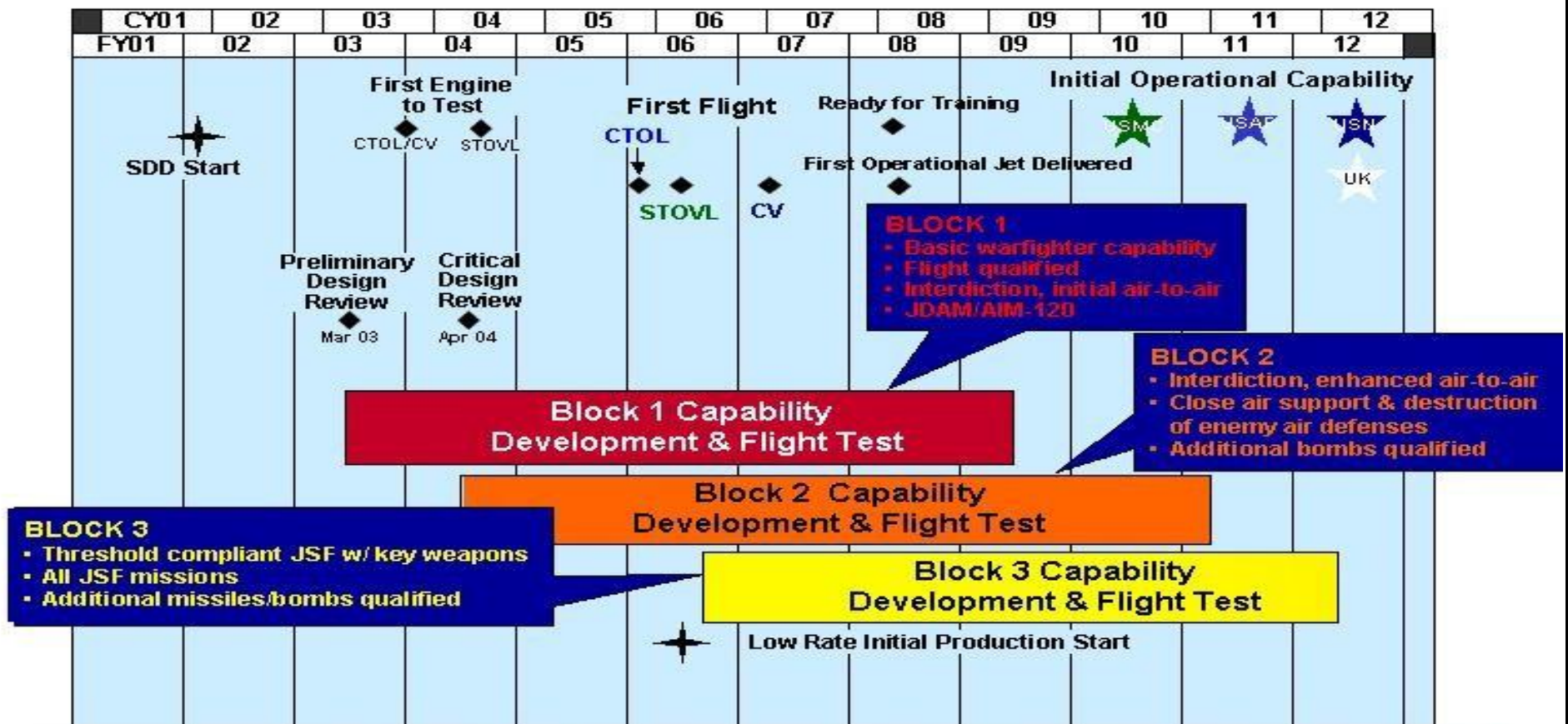
PE NUMBER AND TITLE

0604800F Joint Strike Fighter EMD

PROJECT NUMBER AND TITLE

3831 Joint Strike Fighter

System Development and Demonstration (SDD) Schedule



Note: Under review by DoD and TBD pending approval of revised Acquisition Program Baseline (APB)

UNCLASSIFIED

Exhibit R-4a, RDT&E Schedule Detail	DATE February 2004
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604800F Joint Strike Fighter EMD	PROJECT NUMBER AND TITLE 3831 Joint Strike Fighter
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	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) <u>Schedule Profile</u>			
(U) Milestone B and Award of SDD Contract			
(U) Air System Requirements Review (ASRR)			
(U) Integrated Baseline Reviews (IBRs) at Lockheed Martin, P&W and GE			
(U) Preliminary Design Review for Air System	3Q		
(U) CTOL Critical Design Review		3Q	
(U) STOVL Critical Design Review (TBD)			
(U) CV Critical Design Review (TBD)			
(U) CTOL First Flight (3 Qtr FY 2006)			
(U) STOVL First Flight (TBD)			
(U) CV First Flight (TBD)			
(U) 1st Operational Aircraft Delivered (TBD)			
(U) USMC Initial Operational Capability (IOC)			
(U) USAF IOC			
(U) USN IOC			
(U) Milestone C Decision for Full Rate Production			
Note: TBD pending approval of revised Acquisition Program Baseline (APB).			