

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE February 2003		
BUDGET ACTIVITY 05 - System Development and Demonstration (SDD)					PE NUMBER AND TITLE 0604800F Joint Strike Fighter EMD					PROJECT 3831	
COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost	
3831 Joint Strike Fighter	720,058	1,697,810	2,194,087	2,242,485	1,992,356	1,640,118	1,302,679	1,046,762	Continuing	TBD	
Quantity of RDT&E Articles	0	0	0	0	6	8	0	0	0	14	
<p>THIS PROGRAM ELEMENT (PE) CONTINUES DEVELOPMENT EFFORTS BUDGETED IN PE 0603800F PRIOR TO FISCAL YEAR 2002.</p> <p>(U) <u>A. Mission Description</u></p> <p>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 other international countries are participants in the JSF program.</p> <p>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.</p> <p>Quantity of 14 RDT&E articles (6 in FY 2006, 8 in FY 2007) reflects flight test articles; 8 ground test articles are also budgeted in SDD.</p> <p>NOTE: For FY 2006 only, this budget document does not tie to the database due to an administrative error. The correct FY 2006 funding is shown above.</p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$0 Accomplishments/Planned Program (Breakout reflects USN, USAF, UK and other International funding)</p> <p>(U) \$1,623,047 Commenced execution of System Development and Demonstration (SDD) for Air System with Lockheed Martin and F135 Propulsion System with Pratt & Whitney, including International Commonality Effort (ICE).</p> <p>(U) \$26,921 Commenced General Electric's development of a second, interchangeable, JSF engine (F136) for competition in production (previously begun in associated program elements 0603800N and 0603800F).</p> <p>(U) \$101,391 Commenced SDD Systems Engineering (SE) and Mission Support activities, including modeling, simulation and analysis (MS&A) efforts, risk reduction activities and program office functions.</p> <p>(U) \$1,751,359 Total</p>											
Project 3831			Page 1 of 7 Pages				Exhibit R-2 (PE 0604800F)				

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - System Development and Demonstration (SDD)

0604800F Joint Strike Fighter EMD

3831

(U) **A. Mission Description Continued**(U) **FY 2003 (\$ in Thousands)**

(U) \$0 Accomplishments/Planned Program (Breakout reflects USN, USAF, UK and other International funding)

(U) \$3,462,052 Continues SDD execution of the Air System and F135 Propulsion System, including ICE and commences technology maturation efforts.

(U) \$174,684 Continues General Electric's development of a second, interchangeable JSF engine (F136) for competition in production.

(U) \$187,474 Continues SDD SE and Mission Support activities and commences technology maturation efforts.

(U) \$3,824,210 Total

(U) **FY 2004 (\$ in Thousands)**

(U) \$0 Accomplishments/Planned Program (Breakout reflects USN, USAF, UK and other International funding)

(U) \$4,515,000 Continues SDD execution of the Air System and F135 Propulsion System, including ICE and commences technology maturation efforts.

(U) \$100,000 Continues General Electric's development of a second, interchangeable JSF (F136) engine for competition in production.

(U) \$273,973 Continues SDD SE and Mission Support activities and commences technology maturation efforts.

(U) \$4,888,973 Total

(U) **B. Budget Activity Justification**

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.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Total Cost</u>
(U) Previous President's Budget	761,893	1,743,668	1,941,951	TBD
(U) Appropriated Value	769,511	1,733,668		TBD
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-7,618	-18,358		
b. Small Business Innovative Research	-24,813			
c. Omnibus or Other Above Threshold Reprogram		-17,500		
d. Below Threshold Reprogram	-13,505			
e. Rescissions	-3,517			
(U) Adjustments to Budget Years Since FY 2003 PBR			252,136	
(U) Current Budget Submit/FY 2004 PBR	720,058	1,697,810	2,194,087	TBD

Project 3831

Page 2 of 7 Pages

Exhibit R-2 (PE 0604800F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - System Development and Demonstration (SDD)

0604800F Joint Strike Fighter EMD

3831

(U) **C. Program Change Summary (\$ in Thousands) Continued**(U) **Significant Program Changes:**

FY 2004 increase of \$252,136 thousand reflects net decrease of \$38,639 thousand for economic assumptions and increase of \$290,775 thousand primarily for revised termination liability assumptions.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E										
(U) RDT&E 0604800N	724,911	1,708,900	2,171,736	2,226,004	1,999,481	1,647,984	1,309,257	1,056,953	Continuing	TBD
(U) UNITED KINGDOM	95,000	161,000	200,000	356,000	384,500	355,200	266,200	85,000	Continuing	TBD
(U) CANADA	56,000	6,200	6,920	7,520	7,480	5,320	2,870	1,580	Continuing	TBD
(U) DENMARK	3,200	7,400	7,700	24,030	23,980	21,910	14,510	4,110	Continuing	TBD
(U) NETHERLANDS	48,000	90,000	103,000	123,000	133,000	120,000	76,000	28,000	Continuing	TBD
(U) NORWAY	7,890	8,950	22,980	24,700	24,590	15,380	8,290	4,560	Continuing	TBD
(U) ITALY	85,000	104,000	126,000	152,000	171,000	154,000	98,000	36,000	Continuing	TBD
(U) TURKEY	11,300	25,700	28,700	31,200	31,000	22,100	11,900	6,500	Continuing	TBD
(U) AUSTRALIA		14,250	27,850	39,450	29,950	15,000	8,500	5,000	Continuing	TBD
(U) Other APPN										
(U) USAF 0207142F				70,833	992,385	1,733,950	1,981,764	2,872,598	Continuing	TBD
PROCUREMENT										
(U) USN 0204146N				48,696	744,041	1,293,365	3,550,168	5,496,110	Continuing	TBD
PROCUREMENT										
(U) Other Program Funding										
(U) USAF 0207142F MILCON			19,060	10,300	0	0	104,100	93,000	Continuing	TBD
(U) USAF 91211F MILCON			1,000	900					Continuing	TBD

Project 3831

Page 3 of 7 Pages

Exhibit R-2 (PE 0604800F)

1023

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - System Development and Demonstration (SDD)

0604800F Joint Strike Fighter EMD

3831

(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) USN 24146N MILCON			24,370						Continuing	TBD
(U) USN Spares and Repair Parts					15,002	34,107	28,979	23,238	Continuing	TBD

Note 1: 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) **E. 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 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

Project 3831

Page 4 of 7 Pages

Exhibit R-2 (PE 0604800F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - System Development and Demonstration (SDD)

0604800F Joint Strike Fighter EMD

3831

(U) **E. Acquisition Strategy Continued**

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 of the USAF and USMC JSF variants is planned to begin in FY 2006 with advance procurement for Lot 1 in FY 2005. Procurement of the USN JSF variant is planned to begin in FY 2008 with advance procurement for Lot 3 in FY 2007.

(U) **F. Schedule Profile**

	<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(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								X				
(U) CTOL Critical Design Review											X	
(U) STOVL Critical Design Review (1st Qtr FY 2005)												
(U) CV Critical Design Review (4th Qtr FY 2005)												
(U) CTOL First Flight (1st Qtr FY 2006)												
(U) STOVL First Flight (3rd Qtr FY 2006)												
(U) CV First Flight (2nd Qtr FY 2007)												
(U) 1st Operational Aircraft Delivered (3rd Qtr FY 2008)												
(U) USMC Initial Operational Capability (IOC) (FY2010))												
(U) USAF IOC (FY 2011)												
(U) USN IOC (FY 2012)												
(U) Milestone C Decision for Full Rate Production (3rd Qtr FY 2012)												

Project 3831

Page 5 of 7 Pages

Exhibit R-2 (PE 0604800F)

1025

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE		February 2003		
BUDGET ACTIVITY					PE NUMBER AND TITLE			PROJECT			
05 - System Development and Demonstration (SDD)					0604800F Joint Strike Fighter EMD			3831			
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>											
					FY 2002		FY 2003		FY 2004		
(U) SDD Air System (Lockheed Martin)					851,493		2,707,796		3,777,000		
(U) P&W F135 Engine					763,242		754,256		738,000		
(U) P&W International Commonality Study					8,312						
(U) GE F136 Engine					26,921		174,684		100,000		
(U) Mission Support					101,391		187,474		273,973		
(U) Total					1,751,359		3,824,210		4,888,973		
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
(U) <u>Performing Organizations:</u>											
<u>Contractor or</u>		<u>Contract</u>									
<u>Government</u>		<u>Method/Type</u>		<u>Award or</u>		<u>Performing</u>		<u>Project</u>			
<u>Performing</u>		<u>or Funding</u>		<u>Obligation</u>		<u>Activity</u>		<u>Office</u>		<u>Total Prior</u>	
<u>Activity</u>		<u>Vehicle</u>		<u>Date</u>		<u>EAC</u>		<u>EAC</u>		<u>to FY 2002</u>	
										<u>Budget</u>	
										<u>FY 2002</u>	
										<u>FY 2003</u>	
										<u>FY 2004</u>	
										<u>Budget to</u>	
										<u>Complete</u>	
										<u>Total</u>	
										<u>Program</u>	
<u>Product Development Organizations</u>											
Lockheed Martin		C/CPAF		10/02		19,041,545		19,041,545		851,493	
Pratt & Whitney		SS/CPAF		10/02		4,833,785		4,833,785		771,554	
General Electric		SS/CPAF		10/02		425,498		425,498		26,921	
Various		Various		Misc.		Continuing		Continuing		5,775	
Sverdrup/Anteon		C/CPAF		12/02		Continuing		Continuing		3,150	
LSI/Veridian		SS/CPFF		12/02		Continuing		Continuing		4,709	
Various		Various		Field Sites		Continuing		Continuing		82,380	
<u>Support and Management Organizations</u>											
Stanley		SS/CPFF		10/02		Continuing		Continuing		3,836	
Aegis		SS/CPFF		12/02		Continuing		Continuing		1,541	
<u>Test and Evaluation Organizations</u>											
Budget to Complete and Total Program cost are TBD pending completion of December 2002 Selected Acquisition Report (SAR).											
The GE contract target value (EAC) reflects the negotiated value of the current Phase IIIb.											
Project 3831				Page 6 of 7 Pages				Exhibit R-3 (PE 0604800F)			

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2003		
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT		
05 - System Development and Demonstration (SDD)				0604800F Joint Strike Fighter EMD			3831		
(U) <u>Government Furnished Property:</u>									
	<u>Contract</u>								
	<u>Method/Type</u>	<u>Award or</u>							
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>									
<u>Support and Management Property</u>									
<u>Test and Evaluation Property</u>									
				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>				<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development					1,745,982	3,813,335	4,872,913	TBD	TBD
Subtotal Support and Management					5,377	10,875	16,060	TBD	TBD
Subtotal Test and Evaluation									
Total Project					1,751,359	3,824,210	4,888,973	TBD	TBD

Project 3831

Page 7 of 7 Pages

Exhibit R-3 (PE 0604800F)