

## UNCLASSIFIED

PE NUMBER: 0604800F

PE TITLE: Joint Strike Fighter EMD

## Exhibit R-2, RDT&amp;E Budget Item Justification

DATE

February 2006

## BUDGET ACTIVITY

## 05 System Development and Demonstration (SDD)

## PE NUMBER AND TITLE

## 0604800F Joint Strike Fighter EMD

Cost (\$ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	2,080.058	2,333.009	1,999.068	1,708.903	1,393.280	1,103.051	733.432	Continuing	TBD
3831 Joint Strike Fighter	2,080.058	2,333.009	1,999.068	1,708.903	1,393.280	1,103.051	733.432	Continuing	TBD

The FY03 National Defense Authorization Act (NDAA) language directed T&E centers to charge only direct costs beginning in FY06; this resulted in a zero-balance transfer (ZBT) of funding over the FYDP from the customer accounts (for indirect test cost) to T&E Support, PE 65807F.

(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. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Air Force. 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 15 AF and DoN RDT&E articles (1 in FY 2006, 2 in FY 2007, 6 in FY 2008, and 6 in FY 2009) reflects flight test articles; 7 ground test articles are also budgeted in SDD.

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	2,181.272	2,474.763	2,192.584
(U) Current PBR/President's Budget	2,080.058	2,333.009	1,999.068
(U) Total Adjustments	-101.214	-141.754	
(U) Congressional Program Reductions	-0.004	-108.035	
Congressional Rescissions	-1.673	-33.719	
Congressional Increases			
Reprogrammings	-41.965		
SBIR/STTR Transfer	-57.572		

(U) **Significant Program Changes:**

NOTE: This submission reflects JSF Program Replan. Additional design work and scope was required to achieve weight reductions in the STOVL variant, necessitating an increase in cost and schedule. See R-4a Schedule Exhibit for detailed schedule changes. In addition, PB07 terminates funding for the F136 Alternate Engine Program (See details in Termination Form)

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## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2006

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 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
3831 Joint Strike Fighter	2,080.058	2,333.009	1,999.068	1,708.903	1,393.280	1,103.051	733.432	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(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. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Air Force. 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 15 AF and DoN RDT&E articles (1 in FY 2006, 2 in FY 2007, 6 in FY 2008, and 6 in FY 2009) reflects flight test articles; 7 ground test articles are also budgeted in SDD.

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) System Development and Demonstration (SDD) for Air System with Lockheed Martin including International Commonality Effort (ICE) commenced execution in FY02. FY06 and FY07 continue SDD execution of the Air System, including airframe, vehicle systems, mission systems, autonomic logistics, systems engineering and integrated test efforts	3,506.788	3,774.561	3,587.400
(U) System Development and Demonstration (SDD) for F135 Propulsion System with Pratt & Whitney including International Commonality Effort (ICE) commenced in FY02. FY06 and FY07 continue SDD execution of the F135 Propulsion System, including engine testing, autonomic logistics, integration and performing technology maturation efforts.	956.382	846.726	583.900
(U) FY06 and FY07 continue the Fighter Engineer Team (General Electric/Rolls Royce) F136 development for a second, interchangeable, JSF engine for competition in production (previously begun in associated Program Elements 0603800N and 0603800F). Efforts include technology maturation, engine testing, autonomic logistics and integration.	212.232	332.606	0.000
(U) SDD Systems Engineering (SE) and mission support activities, including Modeling, Simulation and Analysis (MS&A) efforts, risk reduction activities and program office functions commenced in FY02. FY05, FY06, and FY07 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.	246.547	446.343	561.427
(U) Total Cost	4,921.949	5,400.236	4,732.727

Project 3831

R-1 Shopping List - Item No. 92-2 of 92-8

Exhibit R-2a (PE 0604800F)

## UNCLASSIFIED

## Exhibit R-2a, RDT&amp;E Project Justification

DATE

February 2006

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

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

FY 2005

FY 2006

FY 2007

Note: Total cost includes USN and International partner contributions in addition to USAF funding. Exhibit R-2 data reflects USAF funding only.

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</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>Complete</u>	
(U) USN RDT&E	2083.779	2269.197	2030.979	1710.781	1323.284	1021.458	645.357	Continuing	TBD
(U) Int'l Partner Funding	758.112	798.030	702.680	479.340	226.185	166.230	136.720	Continuing	TBD
(U) USN PROCUREMENT			245.016	1876.432	4663.380	4610.037	3850.870	Continuing	TBD
(U) USAF PROCUREMENT		118.405	1113.098	1406.295	2156.737	2568.499	3631.273	Continuing	TBD
(U) USN Initial Spares and Repair Parts				117.653	185.612	245.603	251.628	Continuing	TBD
(U) USAF Initial Spares and Repair Parts			98.084	102.232	186.308	190.313	273.210	Continuing	TBD
(U) USN MILCON									
(U) USAF MILCON 0207142F	9.715	0.000	0.000	85.402	79.998	0.000	0.000	Continuing	TBD
(U) USAF MILCON 91211F	0.900								

This is a joint program with no executive service. Service Acquisition Executive (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 continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom and other International countries are participants in the SDD phase of JSF.

Note: The USAF PROCUREMENT line includes all JSF funding in Budget Activities 01 and 06. USAF Initial Spares and Repair Parts is a subset of USAF PROCUREMENT. USN Initial Spares and Repair Parts is a subset of USN PROCUREMENT. International Partner Funding includes funds provided under the Italy and Netherlands Bilateral agreements. Special Memorandum of Understanding provisions exist for those two countries to pursue country unique requirements.

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 \$118,056. 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.

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<b>Exhibit R-2a, RDT&amp;E Project Justification</b>		DATE <b>February 2006</b>
BUDGET ACTIVITY <b>05 System Development and Demonstration (SDD)</b>	PE NUMBER AND TITLE <b>0604800F Joint Strike Fighter EMD</b>	PROJECT NUMBER AND TITLE <b>3831 Joint Strike Fighter</b>
<p>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 (LCC) 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 FY2000.</p> <p>A sizable technology maturation effort was conducted to reduce risk and 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 LCC impact to component, subsystem and the total system.</p> <p>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 Landing (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.</p> <p>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 &amp; 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. The JSF Acquisition Strategy and updated program schedule were approved following the May 05 DAB.</p> <p>USAF procurement is planned to begin in FY 2007 with advance procurement in FY 2006. DoN procurement is planned to begin in FY 2008 with advance procurement in FY 2007.</p>		
Project 3831	R-1 Shopping List - Item No. 92-4 of 92-8	Exhibit R-2a (PE 0604800F)

## UNCLASSIFIED

## Exhibit R-3, RDT&amp;E Project Cost Analysis

DATE

February 2006

## 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

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target Value</u> <u>of Contract</u>
(U) <u>Product Development</u>												
Lockheed Martin	C/CPAF	Ft. Worth, TX	6,691.000	3,503.600	Oct-04	3,774.561	Oct-05	3,587.400	Oct-06	Continuing	TBD	25,704.015
Lockheed Martin	SS/BOA	Ft. Worth, TX	3.200	0.000		0.000		0.000			3.200	3.200
Lockheed Martin	SS/IDIQ	Ft. Worth, TX	3.000	3.188		0.000		0.000			6.188	6.188
Pratt & Whitney	SS/CPAF	Hartford, CT	2,422.000	942.758	Oct-04	846.727	Oct-05	583.899	Oct-06	Continuing	TBD	5,878.004
Pratt & Whitney	SS/BOA/ID	Hartford, CT	37.000	13.624	Oct-04						50.624	50.624
	IQ											
General Electric	SS/CPAF	Cincinnati, OH	444.000	102.624	Oct-04	0.000		0.000			546.624	546.624
General Electric	SS/BOA	Cincinnati, OH	1.961	5.258							7.219	7.219
General Electric	SS/IDIQ	Cincinnati, OH	3.000	1.884	Oct-04	0.000	Oct-05	0.000			4.884	4.884
General Electric	SS/CPAF	Cincinnati, OH		102.466	Oct-04	332.606					435.072	435.072
Systems Engineering						101.771	Oct-05	112.425	Oct-06		214.196	214.196
Subtotal Product Development			9,605.161	4,675.402		5,055.665		4,283.724		Continuing	TBD	32,850.026
Remarks:												
(U) <u>Support</u>												
NAWC Lakehurst	Various	NAWC Lakehurst	2.783	0.818	Oct-04	0.990	Oct-05	1.203	Oct-06	Continuing	TBD	TBD
NAWC Patuxent River	Various	Patuxent River, VA	135.283	70.636	Oct-04	57.790	Oct-05	91.283	Oct-06	Continuing	TBD	TBD
NAWC China Lake	Various	Various	38.542	49.407	Oct-04	43.996	Oct-05	42.603	Oct-06	Continuing	TBD	TBD
ASC	Various	Wright Patterson AFB	20.173	10.362	Oct-04	22.472	Oct-05	26.766	Oct-06	Continuing	TBD	TBD
AFFTC	Various	Various	37.908	2.505	Oct-04	3.073	Oct-05	4.321	Oct-06	Continuing	TBD	
ESC	Various	Hanscom AFB	7.225	2.225	Oct-04	17.678	Oct-05	17.600	Oct-06	Continuing	TBD	
Other	Various	Various	142.367	0.000	Oct-04	0.000	Oct-05	0.000	Oct-06	Continuing	TBD	
Miscellaneous	Various	Various	16.230	7.358	Dec-04	13.534	Oct-05	12.443	Dec-06	Continuing	TBD	
Sverdrup/Anteon	C/CPAF	Arlington, VA	13.349	7.192	Dec-04	21.681	Dec-05	22.489	Dec-06	Continuing	TBD	
AI-ES, Arlington, VA	SS/CPFF	Arlington, VA	19.120	9.711	Dec-04	16.735	Dec-05	22.587	Dec-06	Continuing	TBD	
Subtotal Support			432.980	160.214		197.949		241.295		Continuing	TBD	TBD
Remarks:												
(U) <u>Test &amp; Evaluation</u>												
NAWC Patuxent	Various	NAWC Patuxent		37.573		24.445	Oct-05	37.924	Oct-06	Continuing	TBD	
AFFTC	Various	Edwards AFB		11.934		39.768	Oct-05	70.329	Oct-06	Continuing	TBD	
NAWC China Lake	Various	NAWC China Lake		4.364		5.380	Oct-05	2.180	Oct-06	Continuing	TBD	
WEPS	Various	Eglin AFB		0.000		33.803	Oct-05	35.600	Oct-06	Continuing	TBD	
OT	Various	Various		1.412		5.146	Oct-05	7.265	Oct-06	Continuing	TBD	
Other (including Classified PIDs)	Various	Various		0.234		6.082	Oct-05	9.300	Oct-06	Continuing	TBD	
Subtotal Test & Evaluation			0.000	55.517		114.624		162.598		Continuing	TBD	0.000

Project 3831

R-1 Shopping List - Item No. 92-5 of 92-8

Exhibit R-3 (PE 0604800F)

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## Exhibit R-3, RDT&amp;E Project Cost Analysis

DATE

February 2006

## BUDGET ACTIVITY

## 05 System Development and Demonstration (SDD)

## PE NUMBER AND TITLE

0604800F Joint Strike Fighter EMD

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Remarks:

(U) Management

Stanley	SS/CPFF	Arlington, VA	25.000	14.367	Oct-04	14.968	Oct-05	21.128	Oct-06	Continuing	TBD	TBD
Aegis	SS/CPFF	Arlington, VA	7.172	3.896	Dec-04	3.928	Dec-05	6.600	Dec-06	Continuing	TBD	TBD
Program Management Support				12.553		13.102	Oct-05	17.382	Oct-06	Continuing	TBD	
Subtotal Management			32.172	30.816		31.998		45.110		Continuing	TBD	TBD

Remarks:

(U) Total Cost			10,070.313	4,921.949		5,400.236		4,732.727		Continuing	TBD	TBD
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Remarks: Prior Years reflect \$4,379.834 USAF/\$4,466.337 USN/\$1,249.969 International/Total \$10,070.314

FY 2005 reflects \$2,080.058 USAF/\$2,083.779 USN/\$758.112 International/Total \$4921.949

FY 2006 reflects \$2,333.009 USAF/\$2,269.197 USN/\$798.030 International/Total \$5,400.236

FY 2007 reflects \$1,999.068 USAF/\$2,030.979 USN/\$702.680 International/Total \$4,732.727



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## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

February 2006

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

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R4, Schedule Profile

DATE:

January 2006

APPROPRIATION/BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

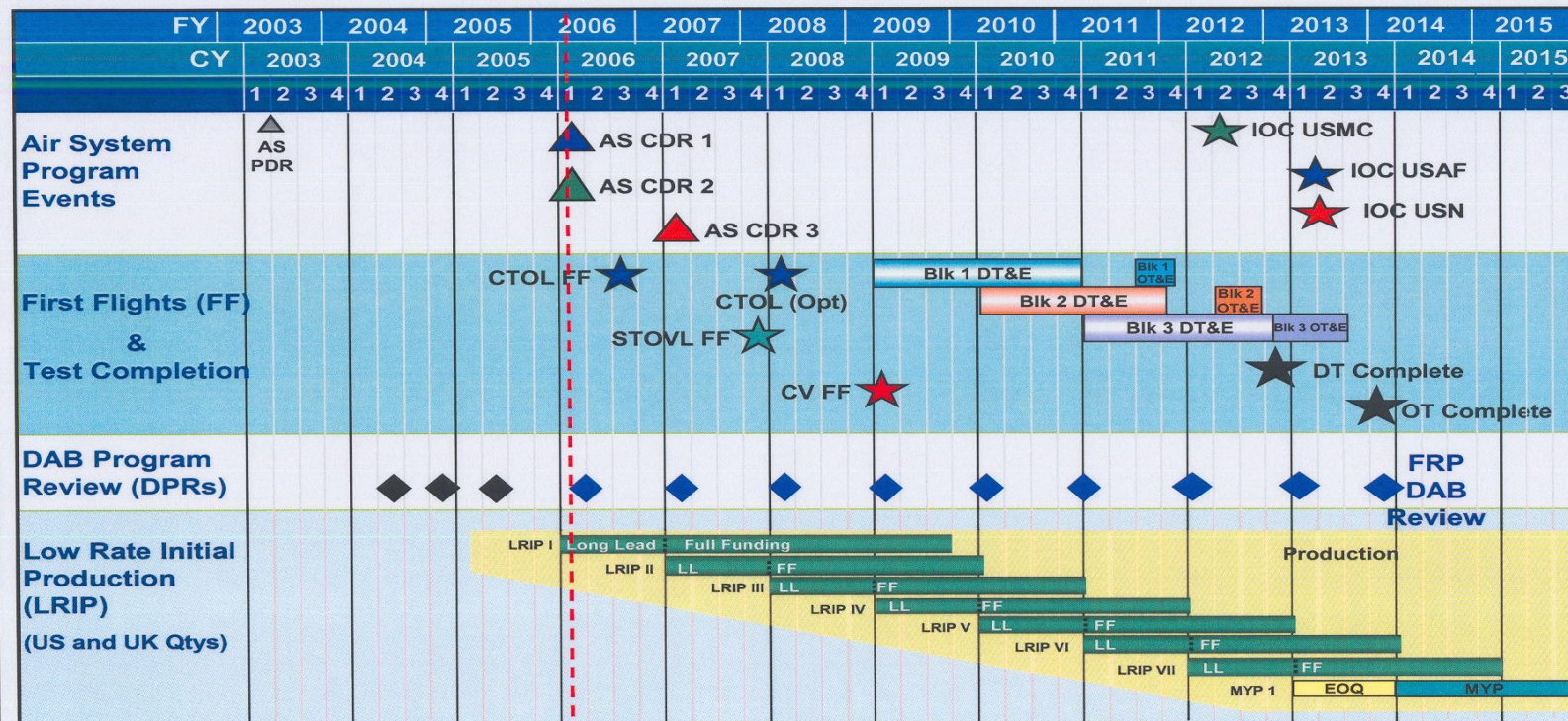
PROGRAM ELEMENT NUMBER AND NAME

0604800F / JOINT STRIKE FIGHTER EMD

PROJECT NUMBER AND NAME

3831 / JOINT STRIKE FIGHTER

## JSF Top Level Schedule SDD Program



FOR OFFICIAL USE ONLY

Project 3831

R-1 SHOPPING LIST - Item No. 90-7 of 90-8

Exhibit R-4 (PE 0604800F)

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Project 3831

R-1 Shopping List - Item No. 92-7 of 92-8

Exhibit R-4 (PE 0604800F)

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## Exhibit R-4a, RDT&amp;E Schedule Detail

DATE

February 2006

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

(U) Schedule ProfileFY 2005FY 2006FY 2007

(U) DAB Program Review (DPR)

1-2Q

2Q

2Q

(U) Critical Design Reviews (CDR 1&amp;2 FY06, CDR 3 FY07)

2Q

2Q

(U) F-35A Conventional Takeoff and Landing (CTOL) First Flight

4Q



**UNCLASSIFIED**

**TERMINATION OF INVESTMENT-RELATED PROGRAMS**

**FY 2007 President's Budget**

**(Dollars in Millions)**

PE	BPAC	APPN	FY 2005		FY 2006		FY 2007		FY 2008		FY 2009		FY 2010		FY 2011	
			COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY
0604800F	653831	3600	212.232	0	332.606	0	0.000	0	0.000	0	0.000	0	0.000	0	0.000	0

**Effort Title**

Fighter Engine Team (General Electric/Rolls Royce) F136 System Development and Demonstration

**Program Description**

Development for a second, interchangeable, JSF engine for competition in production (previously begun in associated Program Elements 0603800N and 0603800F). Efforts include technology maturation, engine testing, autonomic logistics and integration.

**Status to Date**

PB07 Terminates funding for the F136 Alternate Engine Program. Terminating the F136 program is projected to save DoD \$1.8B, including \$408M in FY07. The F-35 program continues to execute planned FY06 F136 activities pending a contract termination decision.

**Rationale for Termination**

The decision to cancel the F136 program provides the Air Force the best balance of risk and cost. It was not a reflection of F136 performance, cost, or management. Recent experience with engine development for F-22 and F/A-18E/F indicates sole source risks are modest and acceptable. The Pratt & Whitney F135 engine continues to meet or exceed stringent performance requirements.