

**UNCLASSIFIED**

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

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>May 2009</b>
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<b>BUDGET ACTIVITY</b> <b>05 System Development and Demonstration (SDD)</b>	<b>PE NUMBER AND TITLE</b> <b>0604800F Joint Strike Fighter EMD</b>
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Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	1,939.107	1,734.299	1,858.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3831 Joint Strike Fighter	1,939.107	1,734.299	1,858.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

The Joint Strike Fighter (JSF) program will develop and deploy a family of highly common, affordable next generation, stealthy, multi-role strike fighter aircraft that meets the needs of the USN, USAF, USMC and allies with maximum commonality among the variants, consistent with National Disclosure Policy, 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 seven other international countries, and three Foreign Military Sales cases 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 19 RDT&E articles reflect flight test articles (including 1 asset in FY06, 1 in FY08, 9 in FY09, and 8 in FY10); 6 ground test articles are also budgeted in SDD which includes total program quantities for Navy and AF. Fiscal year phasing of aircraft reflects asset ferry dates.

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

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Previous President's Budget	1,991.537	1,524.016	1,132.458
(U) Current PBR/President's Budget	1,939.107	1,734.299	1,858.055
(U) Total Adjustments	-52.430	210.283	
(U) Congressional Program Reductions		-0.003	
Congressional Rescissions	0.181	-4.714	
Congressional Increases		215.000	
Reprogrammings			
SBIR/STTR Transfer	-52.611		

**(U) Significant Program Changes:**

FY09 congressional add for F-136 Alternate Engine. FY10 increase of \$726M reflects topdown program adjustments and program extension.

**Exhibit R-2a, RDT&E Project Justification**

DATE  
**May 2009**

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>		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
3831 Joint Strike Fighter	1,939.107	1,734.299	1,858.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

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

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Continue System Development and Demonstration SDD execution of the Air System, with Lockheed Martin including International Commonality Effort (ICE) which includes airframe, vehicle systems, mission systems, autonomic logistics, systems engineering and integrated test efforts.	2,926.312	2,355.639	2,793.947
(U) Continue SDD execution of the F135 Propulsion System, with Pratt & Whitney using (ICE) which includes engine testing, autonomic logistics, integration and performing technology maturation efforts.	654.258	594.154	405.000
(U) Continue the Fighter Engineering 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. Congressional Add actions restored \$480M in FY08 and \$430M in FY09.	463.609	417.000	0.000
(U) Continue SDD Systems Engineering (SE) including systems operations requirements analysis, program integration, requirements integration, and interoperability support. Government Development Test and Evaluation (DT&E) continues in support of first flight of test aircraft. Elements of DT&E include preparation for flight testing, weapons integration testing, and Program Introduction Documents (PIDs). Continue SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Continue management support services, travel, engineering technical services, and studies analyses and evaluations in support of program objectives.	291.152	333.014	482.538
(U) Total Cost	4,335.332	3,699.806	3,681.485

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

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

FY 2008

FY 2009

FY 2010

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 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) USN RDT&E	1843.505	1714.892	1709.350							
(U) USN RDT&E - USRL	5.378	29.678	31.946							
(U) Int'l Partner Funding	552.720	250.615	114.080							
(U) USN PROCUREMENT	1223.640	1650.088	4478.048							
(U) USAF PROCUREMENT	1412.097	1660.628	2349.430							
(U) USN Other Procurement	0.855	2.972	6.036							
(U) USN Initial Spares and Repair Parts	0.000	32.653	248.958							
(U) USAF Initial Spares and Repair Parts	69.756	60.930	129.710							
(U) USN MILCON	0.000	0.000	27.567							
(U) USAF MILCON 0207142F	74.300	22.100	48.800							
(U) USAF Modifications										
(U) USAF RDT&E 0207142F										

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 Navy. 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; and International Partner contributions of \$253.921 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:

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- (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 (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.

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.

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.

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 through FY08 when program funding ends.

The updated JSF Acquisition Strategy and program schedule were approved following the May 05 DAB. APR 06 DAB authorized full funding for LRIP I procurement. USAF LRIP I Advanced Procurement funding was awarded during FY06, followed by the USAF Regular Procurement award in FY07. USAF and DoN Advanced Procurement funding for LRIP II was awarded during FY07. USAF LRIP II full-funding contract award occurred in April 08. DoN LRIP II full funding contract was awarded July 08, upon successful first flight of the DoN STOVL aircraft.

USAF and DoN Advance Procurement funding for LRIP III was awarded in May 08; LRIP III full funding to be awarded in April 09. LRIP IV advanced procurement was awarded in February 09, and full funding contract award will occur in February 10.

Budget reflects a one-year flight test extension approved by the Executive Steering Committee.

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**Exhibit R-3, RDT&E Project Cost Analysis**

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**May 2009**

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

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
Lockheed Martin	C/CPAF	Ft. Worth, TX	17,707.048	2,926.312	Oct-07	2,355.247	Oct-08	2,793.947	Oct-09		25,782.555	
Lockheed Martin	SS/BOA	Ft. Worth, TX	5.630	0.000		0.000		0.000			5.630	
Lockheed Martin	SS/IDIQ	Ft. Worth, TX	17.613	0.000	Oct-07	0.391		0.000			18.004	
Pratt & Whitney	SS/CPAF	Hartford, CT	4,857.742	654.258	Oct-07	594.041	Oct-08	405.000	Oct-09		6,511.041	
Pratt & Whitney	SS/BOA	Hartford, CT	36.016	0.000		0.000		0.000			36.016	
Pratt & Whitney	SS/IDIQ	Hartford, CT	14.677	0.000		0.113		0.000			14.790	
General Electric	SS/CPAF	Cincinnati, OH	382.753	0.000		0.000		0.000			382.753	
General Electric	SS/BOA	Cincinnati, OH	6.348	0.000		0.000		0.000			6.348	
General Electric	SS/IDIQ	Cincinnati, OH	4.262	0.000		0.000		0.000			4.262	
General Electric	SS/Transiti on	Cincinnati, OH	100.371	0.000		0.000		0.000			100.371	
General Electric	SS/Phase III	Cincinnati, OH	5.216	0.000		0.000		0.000			5.216	
General Electric	SS/CPAF/S DD	Cincinnati, OH	784.218	463.609	Oct-07	417.000		0.000			1,664.827	
Systems Engineering		Various	176.885	23.642	Oct-07	33.642	Oct-08	38.963	Oct-09		273.131	
Subtotal Product Development			24,098.780	4,067.822		3,400.434		3,237.909		0.000	34,804.944	0.000
Remarks:												
(U) <u>Support</u>												
AFFTC/Eglin	Various	Various	41.836	9.397	Oct-07	21.320	Oct-08	17.151	Oct-09		89.703	
ASC/AFRL	Various	Wright Patterson AFB, OH	26.214	2.922	Oct-07	5.259	Oct-08	2.532	Oct-09		36.926	
Bolling AFB	Various	Bolling AFB, DC	3.223	2.520	Oct-07	3.591	Oct-08	0.000	Oct-09		9.334	
DMEA	Various	Wright Patterson AFB, OH	4.112	0.000	Oct-07	0.000	Oct-08	0.000			4.112	
ESC	Various	Hanscom AFB, MA	5.798	0.207	Oct-07	0.280	Oct-08	0.000			6.285	
AEDC/Fuel	Various	Various	48.595	36.032	Oct-07	40.582	Oct-08	49.242	Oct-09		174.452	
Jacksonville	Various	Jacksonville, FL	2.061	1.100	Oct-07	0.000	Oct-08	0.273	Oct-09		3.435	
Miscellaneous	Various	Various	93.252	8.436	Nov-07	5.780	Nov-08	6.040	Nov-09		113.508	
Other	Various	Various	80.745	5.780	Nov-07	0.000	Nov-08	0.000			86.525	
NAWC China Lake	Various	Various	52.387	11.447	Nov-07	15.186	Nov-08	28.271	Nov-09		107.291	
NAWC TSD	Various	Various	2.948	1.508	Nov-07	1.596	Nov-08	1.440	Nov-09		7.491	
NAWC Patuxent River	Various	Patuxent River, VA	173.642	29.430	Nov-07	32.776	Nov-08	31.391	Nov-09		267.240	
NSWC	Various	Various	1.719	0.543	Nov-07	0.591	Nov-08	0.491	Nov-09		3.344	

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Exhibit R-3 (PE 0604800F)

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**Exhibit R-3, RDT&E Project Cost Analysis**

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BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
<b>05 System Development and Demonstration (SDD)</b>				<b>0604800F Joint Strike Fighter EMD</b>				<b>3831 Joint Strike Fighter</b>			
SPAWAR	Various	Various	4.038	1.719	Nov-07	0.711	0.000			6.469	
SBIR Technology Insertion Congressional Add	Various	Various	0.000	24.187	Jan-08	0.000	0.000			24.187	
Subtotal Support			540.570	135.229		127.673	136.831		0.000	940.302	0.000
Remarks:											
(U) <u>Test &amp; Evaluation</u>											
NAWC Patuxent	Various	NAWC Patuxent, MD	92.373	24.986	Oct-07	56.587	Oct-08	107.700	Oct-09	281.646	
Edwards AFB	Various	Edwards AFB, CA	97.741	24.109	Oct-07	32.231	Oct-08	96.600	Oct-09	250.681	
Other (including Classified PIDs)	Various	Various	35.946	0.700	Oct-07	2.070	Oct-08	1.212	Oct-09	39.928	
NAWC China Lake	Various	NAWC China Lake, CA	27.354	3.949	Oct-07	10.210	Oct-08	12.260	Oct-09	53.773	
WEPS/Eglin	Various	Eglin AFB, FL	32.974	19.725	Oct-07	9.785	Oct-08	14.100	Oct-09	76.584	
JITC	Various	Various	0.314	0.191	Oct-07	1.140	Oct-08	0.640	Oct-09	2.285	
OT - UK	Various	Various	0.500	0.700	Oct-07	2.070	Oct-08	5.500	Oct-09	8.770	
OT - AFOTEC/AFFTC	Various	Various	6.105	4.048	Oct-07	8.121	Oct-08	5.300	Oct-09	23.574	
OT - JITC/OPTEV	Various	Various	1.204	0.961	Oct-07	1.879	Oct-08	5.300	Oct-09	9.344	
Subtotal Test & Evaluation			294.511	79.369		124.093	248.612		0.000	746.585	0.000
Remarks:											
(U) <u>Management</u>											
Stanley	SS/CPFF	Arlington, VA	71.427	17.224	Oct-07	18.827	Oct-08	17.700	Oct-09	125.178	
Mantech	SS/CPFF	Arlington, VA	20.406	6.676	Nov-07	6.762	Nov-08	7.100	Dec-09	40.944	
Alion/Jacobs Sverdrup	C/CPAF	Arlington, VA	30.113	13.308	Nov-07	14.670	Nov-08	14.093	Dec-09	72.184	
Wyle/AI-ES	SS/CPFF	Arlington, VA	32.489	12.243	Nov-07	3.036	Nov-08	15.389	Dec-09	63.157	
Program Management Support	Various	Arlington, VA	17.827	3.462	Oct-07	4.310	Oct-08	3.849	Oct-09	29.448	
Subtotal Management			172.262	52.912		47.606	58.132		0.000	330.911	0.000
Remarks:											
(U) Total Cost			25,106.123	4,335.332		3,699.806	3,681.485		0.000	36,822.742	0.000
Remarks: Prior Years reflect \$10,761,858 USAF/\$10,823,896 USN/\$3,521,395 International/Total \$25,107,149											
FY 2008 reflects \$1,939,108 USAF/\$1,843,505 USN/\$552,720 International/Total \$4,335,333											
FY 2009 reflects \$1,734,299 USAF/\$1,714,892 USN/\$250,615 International/Total \$3,699,806											
FY 2010 reflects \$1,858,055 USAF/\$1,709,350 USN/\$114,080 International/Total \$3,681,485											

NOTE: Totals may not add correctly due to rounding.

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY  
05 System Development and Demonstration (SDD)

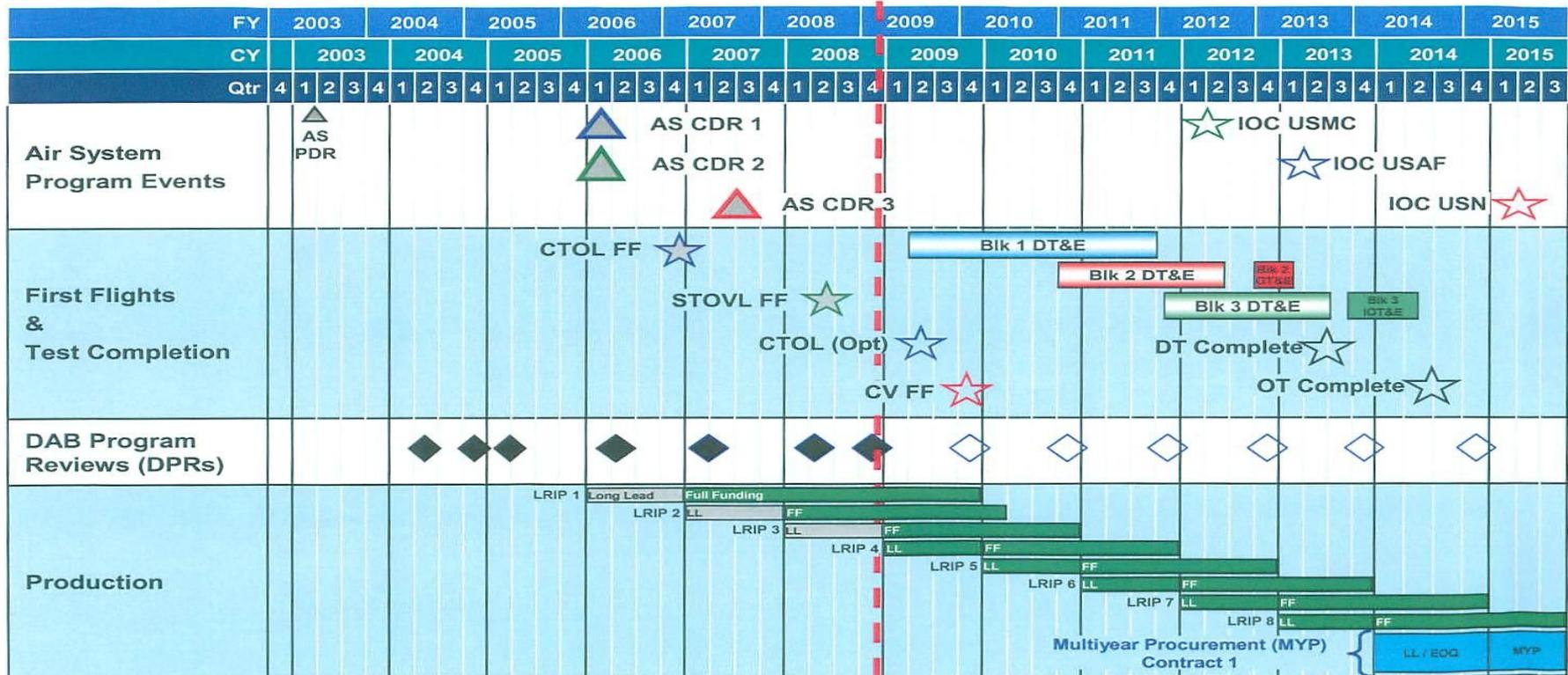
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# JSF Top-Level SDD Program Schedule



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**Exhibit R-4a, RDT&E Schedule Detail**

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**05 System Development and Demonstration (SDD)**

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(U) **Schedule Profile**

(U) DAB Program Review (DPR)

(U) F-35B Short Take Off and Vertical Landing (STOVL) First Flight

(U) F-35A CTOL (Optimized Design) First Flight

(U) F-35C Carrier Variant (CV) First Flight

FY 2008

3Q

3Q

FY 2009

1Q

3Q

FY 2010

1Q

1Q