

UNCLASSIFIED

PE NUMBER: 0207133F
 PE TITLE: F-16 SQUADRONS

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2008
---	------------------------------

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207133F F-16 SQUADRONS
--	--

Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	124.761	70.172	123.979	119.900	107.538	109.629	111.874	Continuing	TBD
2671 F-16 Squadrons	124.761	70.172	123.979	119.900	107.538	109.629	111.874	Continuing	TBD

FY08 totals do not include \$7.7M GWOT requirements still pending Congressional consideration

(U) A. Mission Description and Budget Item Justification

The F-16 Fighting Falcon is the world's premier multi-mission fighter. It is a fixed-wing, high performance, single-engine fighter aircraft. In its 29-year history, the F-16 has proven itself in combat in a variety of air-to-air and air-to-surface missions such as close air support, combat air patrol, forward air control, battle air interdiction (day/night and all-weather) and suppression of enemy air defenses (SEAD)/Destruction of enemy air defenses (DEAD). Also during these years the aircraft has evolved in its capabilities to exploit the advances made in computer, avionics systems, engine, and structures technologies. The F-16 has been selected by more than 20 air forces around the world and foreign military sales production continues in the 21st century. The 312th Aeronautical Systems Group (312 AESG, the F-16 Development Management Office) develops, integrates, and qualifies systems to enhance the overall performance of the F-16 mission.

Enhancements which are being or will be developed during the FYDP include:

- a. Advanced Weapons Integration will include Joint Air-to-Surface Stand-off Missile (JASSM), Joint Direct Attack Munition (JDAM, Laser JDAM), Joint Stand-off Weapon (JSOW), Wind Corrected Munition Dispenser (WCMD), Small Diameter Bomb (SDB), AMRAAM, AIM-9X, and updates to existing weapons into the F-16. This activity includes tasks such as performing risk reduction activities on advanced weapon integration, developing/integrating of advanced racks, pylons, adapters, and the Universal Armament Interface, as well as includes nuclear surety, safety and compatibility tasks.
- b. The AN/APG-68(V)10 radar program is in the process of being terminated.
- c. The Mode S program develops the on-aircraft kit required to integrate and certify a Mode S capable Identification Friend or Foe (IFF) Transponder on Blk 40/42 aircraft to meet Global Air Traffic requirements in Europe.
- d. The Mode 5 program provides secure, encrypted IFF capability to meet OSD mandates. This program will add Mode 5 capability to the Blk 40/42 IFF Transponder installed in the Mode S program through software-only activities. The program modifies the Blk 50/52 Air-to-Air Interrogator (AAI) system through integration of a Mode 5 capable Combined Interrogator/Transponder (CIT) and associated software updates.
- e. The F-16 development efforts are complemented by comprehensive operational flight program (OFP) upgrades including Hardware and Group A development associated with OFP software candidates. Integration efforts includes ALR-56M SW upgrades to the ALR-56M Radar Warning Receiver software, manned fighter reconnaissance capabilities and Joint Helmet Mounted Cueing System (JHMCS) which allows the pilot to designate and shoot targets at high angles without maneuvering the aircraft. Advanced weapons integration moves under the OFP updates line starting in FY08 and includes Joint Air-to-Surface Stand-off Missile (JASSM) and Joint Direct Attack Munition (JDAM, Laser JDAM), Joint Stand-off Weapon (JSOW), Wind Corrected Munition Dispenser (WCMD), Small Diameter Bomb (SDB), AMRAAM, AIM-9X and updates to existing weapons into the F-16. Integration with the high angle off-bore sight AIM-9X missile provides the F-16 with enhanced first-look/first-shoot/first-kill advantage in the "dogfight" arena. Weapons integration also includes tasks such as performing risk reduction activities on advanced weapon integration, development and integration of advanced racks, pylons, adapters, and the Universal Armament Interface, as well as nuclear surety, safety and compatibility tasks. Link 16 provides the F-16s with a secure, jam resistant, high-capacity data communications link with other combat aircraft, airborne

R-1 Line Item No. 121

Page-1 of 9

Exhibit R-2 (PE 0207133F)

1235

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2008

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207133F F-16 SQUADRONS

control aircraft, and ground control centers. Embedded GPS/INS systems will provide improved targeting capability to take full advantage of GPS-aided precision weapons to conduct evolving missions. Mission Planning system integration and ground collision avoidance capability development and integration efforts are included in M-tapes funding. Starting with M6/M6+ OFP, LM Aero will start transition activities for OFP workload and maintenance of M-series OFP tapes to OO-ALC and assumes a "leader/follower" transition where LM Aero will produce M6/M6+ OFP as OO-ALC builds up capability (personnel, special test equipment, OFP development tools & processes, and training). OO-ALC will then assume system lead responsibility for the next M-series OFP program (M7+). During transition, both Lockheed and Ogden may have some concurrent software development capabilities both in terms of special test equipment and personnel since OFP tape developments overlap. This funding is broken out through FY09 for clarity to separate these transition efforts from OFP Development.

f. The EMD Hardware/Advanced Capability Improvements. EMD HW provides funding to test, qualify, and field aircraft subsystems replaced or modified due to requirements changes, Pre-Planned Product Improvements (P3I) and Diminishing Manufacturing Source (DMS). The approach to contracting varies by individual project. These solutions include but are not limited to mux architecture, MMC upgrade, Embedded GPS/INS, digital video recorder, Advanced Data Transfer Cartridge/Unit (ADTC/DTU), display upgrades, radio and communication studies, Electronic Warfare (EW), CAS Data Link and other development activities. Advanced Capability Improvements includes software integration, sensor upgrades, lab and/or on-aircraft evaluation of potential subsystem changes/capability improvements on the F-16 system as well as establishment of associated requirement specification changes. Provides updates and tech order changes to existing pod systems and integration of new pods (e.g., SNIPER, LANTIRN, HTS, LITENING, THUNDER POD, TARS, etc.) The MMC upgrade and Embedded GPS/INS are broken out for clarity.

g. The ALR-56M line provides for upgrades to the ALR-56M Radar Warning Receiver software. Starting in FY09, this will be covered under OFP update line.

h. Blk 30 JHMCS is added as part of congressional plus up starting in FY07

i. The F16 Secure Line of Sight (SLOS) communication mod is in response to CENTCOM Urgent Operational Need for secure line-of-sight/single channel ground and airborne radio system (SINCGARS) communication capabilities which can be upgraded to secure beyond line of sight (BLOS) capability in the future. BLOS received an OMNIBUS reprogramming from the cancelling AN/APG-68(V)10 radar program in FY07. This investment initiates development of SATCOM BLOS capability to communicate with many rotary wing and ground maneuver units in the theater of operations.

Since the development activities in this PE support an operational aircraft, these development activities are funded in the operational system development budget activity 7.

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2008

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207133F F-16 SQUADRONS

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

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	151.997	90.620	113.843
(U) Current PBR/President's Budget	124.761	70.172	123.979
(U) Total Adjustments	-27.236		
(U) Congressional Program Reductions		-20.000	
Congressional Rescissions		-0.448	
Congressional Increases			
Reprogrammings	-23.008		
SBIR/STTR Transfer	-4.228		
(U) <u>Significant Program Changes:</u>			
FY07: \$23.008M reduction due to Omnibus Reprogramming and other BTRs for higher AF priorities			
FY08: \$20M Congressional Program Reduction (due to program execution)			
FY09 increase for added complexity of Universal Armament Interface (UAI) and Small Diameter Bomb (SDB)			

Exhibit R-2a, RDT&E Project Justification

DATE

February 2008

BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0207133F F-16 SQUADRONS			PROJECT NUMBER AND TITLE 2671 F-16 Squadrons		
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
2671 F-16 Squadrons	124.761	70.172	123.979	119.900	107.538	109.629	111.874	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

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

The F-16 Fighting Falcon is the world's premier multi-mission fighter. It is a fixed-wing, high performance, single-engine fighter aircraft. In its 29-year history, the F-16 has proven itself in combat in a variety of air-to-air and air-to-surface missions such as close air support, combat air patrol, forward air control, battle air interdiction (day/night and all-weather) and suppression of enemy air defenses (SEAD)/Destruction of enemy air defenses (DEAD). Also during these years the aircraft has evolved in its capabilities to exploit the advances made in computer, avionics systems, engine, and structures technologies. The F-16 has been selected by more than 20 air forces around the world and foreign military sales production continues in the 21st century. The 312th Aeronautical Systems Group (312 AESG, the F-16 Development Management Office) develops, integrates, and qualifies systems to enhance the overall performance of the F-16 mission.

Enhancements which are being or will be developed during the FYDP include:

- a. Advanced Weapons Integration will include Joint Air-to-Surface Stand-off Missile (JASSM), Joint Direct Attack Munition (JDAM, Laser JDAM), Joint Stand-off Weapon (JSOW), Wind Corrected Munition Dispenser (WCMD), Small Diameter Bomb (SDB), AMRAAM, AIM-9X, and updates to existing weapons into the F-16. This activity includes tasks such as performing risk reduction activities on advanced weapon integration, developing/integrating of advanced racks, pylons, adapters, and the Universal Armament Interface, as well as includes nuclear surety, safety and compatibility tasks.
- b. The AN/APG-68(V)10 radar program is in the process of being terminated.
- c. The Mode S program develops the on-aircraft kit required to integrate and certify a Mode S capable Identification Friend or Foe (IFF) Transponder on Blk 40/42 aircraft to meet Global Air Traffic requirements in Europe.
- d. The Mode 5 program provides secure, encrypted IFF capability to meet OSD mandates. This program will add Mode 5 capability to the Blk 40/42 IFF Transponder installed in the Mode S program through software-only activities. The program modifies the Blk 50/52 Air-to-Air Interrogator (AAI) system through integration of a Mode 5 capable Combined Interrogator/Transponder (CIT) and associated software updates.
- e. The F-16 development efforts are complemented by comprehensive operational flight program (OFP) upgrades including Hardware and Group A development associated with OFP software candidates. Integration efforts includes ALR-56M SW upgrades to the ALR-56M Radar Warning Receiver software, manned fighter reconnaissance capabilities and Joint Helmet Mounted Cueing System (JHMCS) which allows the pilot to designate and shoot targets at high angles without maneuvering the aircraft. Advanced weapons integration moves under the OFP updates line starting in FY08 and includes Joint Air-to-Surface Stand-off Missile (JASSM) and Joint Direct Attack Munition (JDAM, Laser JDAM), Joint Stand-off Weapon (JSOW), Wind Corrected Munition Dispenser (WCMD), Small Diameter Bomb (SDB), AMRAAM, AIM-9X and updates to existing weapons into the F-16. Integration with the high angle off-bore sight AIM-9X missile provides the F-16 with enhanced first-look/first-shoot/first-kill advantage in the "dogfight" arena. Weapons integration also includes tasks such as performing risk reduction activities on advanced weapon integration, development and integration of advanced racks, pylons, adapters, and the Universal Armament Interface, as well as nuclear surety, safety and compatibility tasks. Link 16 provides the F-16s with a secure, jam resistant, high-capacity data communications link with other combat aircraft, airborne control aircraft, and ground control centers. Embedded GPS/INS systems will provide improved targeting capability to take full advantage of GPS-aided precision weapons to conduct evolving missions. Mission Planning system integration and ground collision avoidance capability development and integration efforts are

Exhibit R-2a, RDT&E Project Justification

DATE

February 2008

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0207133F F-16 SQUADRONS

PROJECT NUMBER AND TITLE

2671 F-16 Squadrons

included in M-tapes funding. Starting with M6/M6+ OFP, LM Aero will start transition activities for OFP workload and maintenance of M-series OFP tapes to OO-ALC and assumes a "leader/follower" transition where LM Aero will produce M6/M6+ OFP as OO-ALC builds up capability (personnel, special test equipment, OFP development tools & processes, and training). OO-ALC will then assume system lead responsibility for the next M-series OFP program (M7+). During transition, both Lockheed and Ogden may have some concurrent software development capabilities both in terms of special test equipment and personnel since OFP tape developments overlap. This funding is broken out through FY09 for clarity to separate these transition efforts from OFP Development.

f. The EMD Hardware/Advanced Capability Improvements. EMD HW provides funding to test, qualify, and field aircraft subsystems replaced or modified due to requirements changes, Pre-Planned Product Improvements (P3I) and Diminishing Manufacturing Source (DMS). The approach to contracting varies by individual project. These solutions include but are not limited to mux architecture, MMC upgrade, Embedded GPS/INS, digital video recorder, Advanced Data Transfer Cartridge/Unit (ADTC/DTU), display upgrades, radio and communication studies, Electronic Warfare (EW), CAS Data Link and other development activities. Advanced Capability Improvements includes software integration, sensor upgrades, lab and/or on-aircraft evaluation of potential subsystem changes/capability improvements on the F-16 system as well as establishment of associated requirement specification changes. Provides updates and tech order changes to existing pod systems and integration of new pods (e.g., SNIPER, LANTIRN, HTS, LITENING, THUNDER POD, TARS, etc.) The MMC upgrade and Embedded GPS/INS are broken out for clarity.

g. The ALR-56M line provides for upgrades to the ALR-56M Radar Warning Receiver software. Starting in FY09, this will be covered under OFP update line.

h. Blk 30 JHMCS is added as part of congressional plus up starting in FY07

i. The F16 Secure Line of Sight (SLOS) communication mod is in response to CENTCOM Urgent Operational Need for secure line-of-sight/single channel ground and airborne radio system (SINCGARS) communication capabilities which can be upgraded to secure beyond line of sight (BLOS) capability in the future. BLOS received an OMNIBUS reprogramming from the cancelling AN/APG-68(V)10 radar program in FY07. This investment initiates development of SATCOM BLOS capability to communicate with many rotary wing and ground maneuver units in the theater of operations.

Since the development activities in this PE support an operational aircraft, these development activities are funded in the operational system development budget activity 7.

(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Continue OFP Updates	60.683	46.176	77.422
(U) ALR-56M	0.462	0.100	
(U) Continue Flight Tests DT&E	28.327	19.368	30.149
(U) Weapons Integration	0.230		
(U) Mode S IFF for CAF Aircraft	6.796		
(U) Mode 5 IFF for CAF Aircraft		0.500	6.000
(U) MMC Upgrade Development	6.732	1.544	
(U) EMD HW/Advanced Capabilites Improvements	0.750	0.100	0.500
(U) Embedded GPS/INS Development	4.099	0.076	
(U) OFP Transition	9.496	2.308	9.908
(U) Blk 30 JHMCS	1.550		

Exhibit R-2a, RDT&E Project Justification

DATE

February 2008

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207133F F-16 SQUADRONS	PROJECT NUMBER AND TITLE 2671 F-16 Squadrons
--	--	---

(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Secure Line of Sight (SLOS) Radio	3.118		
(U) Beyond Line of Sight (BLOS) Radio - OMNIBUS Reprogramming	2.518		
(U) Total Cost	124.761	70.172	123.979

(U) <u>C. Other Program Funding Summary (\$ in Millions)</u>	<u>FY 2007</u>	<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>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) Aircraft Procurement (3010), Line Item 41, F-16 Mods	367.868	332.904	273.694	243.419	200.876	71.620	40.865		TBD
(U) Aircraft Procurement (3010), Line Item 97, Post Production Support	12.196	19.323	13.623	20.311	20.610	21.016	21.426		TBD

(U) D. Acquisition Strategy
 RDT&E funds will primarily be executed in developing improved capability, maintenance and safety mods. Operational Flight Program (OFP) software will be continuously updated to complement mod development efforts. OFP transition activities to OO-ALC started in FY06 as part of the "follower/leader" effort with full up development starting with M7+. The EMD Hardware Development line provides funding to test, qualify, and field aircraft subsystems replaced or modified due to requirement changes, Pre-Planned Product Improvements (P3I), radio and communications upgrades as well as Diminishing Manufacturing Source (DMS). The approach to contracting varies by individual project. Lockheed Martin Aeronautics Company (LM Aero) is the prime contractor on all systems except the 110 Engines (General Electric), and the 229 Engines (Pratt & Whitney). Contract types are T&M, CPIF, CPFF and FFP.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis

DATE

February 2008

BUDGET ACTIVITY				PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
07 Operational System Development				0207133F F-16 SQUADRONS					2671 F-16 Squadrons				
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2007 Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
(U) <u>Product Development</u>													
OFP Updates	CPIF, T&M	LM Aero		60.683	Nov-06	46.176	Nov-07	77.422	Nov-08	Continuing	TBD		
OFP Transition	T&M, Organic	LM Aero, OO-ALC		9.496	Feb-07	2.308	Oct-07	9.908	Dec-08	Continuing	TBD		
ALR-56M	Organic	WRALC/LN		0.462	Dec-06	0.100					0.562		
Weapons Integration	T&M/FFP	LM Aero		0.230	Jan-07	0.000					0.230		
Mode S IFF for CAF Aircraft (Blk 40/42)	CPIF	LM Aero		6.796	Jan-07	0.000	Nov-07				6.796		
Mode 5 IFF for CAF Aircraft (Blk 50/52)	CPIF	LM Aero			Jan-07	0.500	Jun-08	6.000	Jan-09	Continuing	TBD		
MMC 7000A Upgrade Development	CPIF	LM Aero		6.732	Nov-06	1.544	Dec-07				8.276		
EMD HW/Advanced Capabilities Improvements	T&M, FFP	LM Aero/AFRL/V A		0.750	Aug-07	0.100	Mar-08	0.500	Mar-09	Continuing	TBD		
Embedded GPS/INS Development	FFP	Northrop Grumman		4.099	Dec-06	0.076	Dec-07				4.175		
Secure Line of Sight (SLOS)	FFP/CPIF	LM Aero		3.118	Jan-08						3.118		
Blk 30 JHMCS	FFP/CPIF	LM Aero		1.550	Dec-07						1.550		
Blk 30 BLOS - Congressional Plus up Reprogrammings	FFP/CPIF	LM Aero		2.518							2.518		
Subtotal Product Development			0.000	96.434		50.804		93.830		Continuing	TBD	0.000	
Remarks:													
(U) <u>Support</u>													
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:													
(U) <u>Test & Evaluation</u>													
Flight Tests	T&M/CPFF , Organic	LM Aero/ Edwards AFB		28.327	Dec-06	19.368	Jan-08	30.149	Nov-08	Continuing	TBD		
Subtotal Test & Evaluation			0.000	28.327		19.368		30.149		Continuing	TBD	0.000	
Remarks:													
(U) <u>Management</u>													
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:													
(U) <u>Rescission</u>													
(U) Total Cost			0.000	124.761		70.172		123.979		Continuing	TBD	0.000	
Remarks:													

R-1 Line Item No. 121

Page-7 of 9

Project 2671

Exhibit R-3 (PE 0207133F)

1241

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2008

BUDGET ACTIVITY
07 Operational System Development

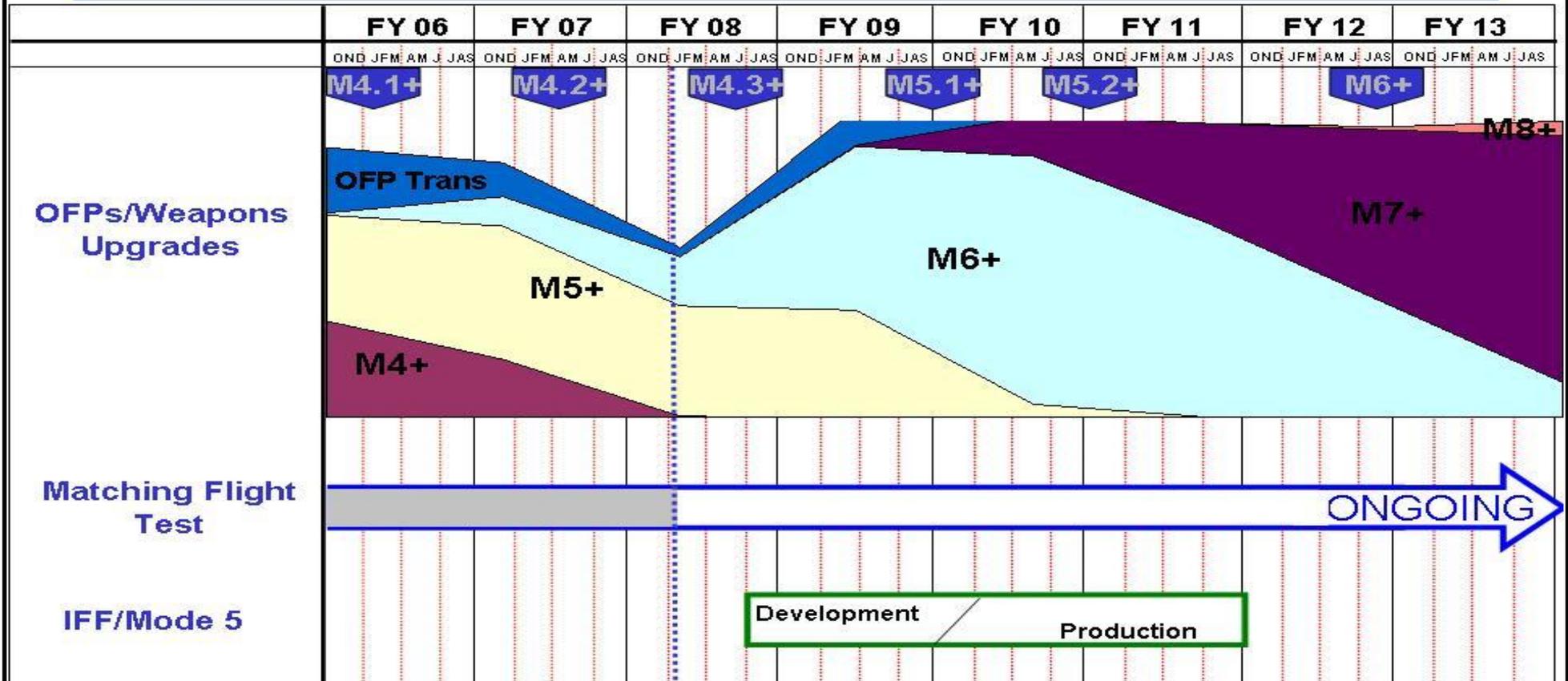
PE NUMBER AND TITLE
0207133F F-16 SQUADRONS

PROJECT NUMBER AND TITLE
2671 F-16 Squadrons



F-16 Program Schedule - USAF

U.S. AIR FORCE



UNCLASSIFIED

Exhibit R-4a, RDT&E Schedule Detail

DATE

February 2008

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0207133F F-16 SQUADRONS	PROJECT NUMBER AND TITLE 2671 F-16 Squadrons
---	---	--

(U) <u>Schedule Profile</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Flight Test Continuous	1-4Q	1-4Q	1-4Q
(U) OFP Development, continuous	1-4Q	1-4Q	1-4Q
(U) OFP Transition activities	1-4Q	1-4Q	1-4Q
(U) ALR-56M, continous	1-4Q	1-4Q	1-4Q
(U) Weapons Integration (moves to OFP development FY08)	1-4Q		
(U) Mode S IFF for CAF Aircraft	1-4Q	1-4Q	
(U) Mode 5 IFF for CAF Aircraft		3-4Q	1-4Q
(U) EMD Hardware (contiuous)	4Q	1-4Q	1-4Q
(U) Embedded GPS/INS Development	1-4Q	1-4Q	
(U) Secure Line of Sight (SLOS)	2-4Q	1-4Q	1-4Q
(U) MMC 7000A Development	1-4Q	1-4Q	
(U) Blk 30 JHMCS	4Q	1-4Q	1-4Q
(U) Blk 30 BLOS - Congressional Plus up	4Q	1-4Q	