PE NUMBER: 0305219F
PE TITLE: PREDATOR DEVELOPMENT/FIELDING

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2005
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305219F PREDATOR DEVELOPMENT/FIELDING

Cost ($ in Millions)		FY 2004 Actual	FY 2005 Estimate	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	0.000	83.207	61.007	32.125	27.705	24.651	25.222	25.658	Continuing	TBD
5143	Predator	0.000	83.207	61.007	32.125	27.705	24.651	25.222	25.658	Continuing	TBD

In FY2005 this was a new PE. Project 5143, Predator, was transferred from PE 0305205F, Unmanned Aerial Vehicles, Project 4755, in order to better manage Predator funds.

(U) A. Mission Description and Budget Item Justification

The basic MQ-1/MQ-9 system consists of the aircraft, a control station, communications equipment, support equipment, readiness spares packages (RSP), technical data/training, and personnel required to operate, maintain, and sustain the system. The system is designed to be modular and open-ended: mission-specific equipment is employed in a 'plug-and-play' mission kit concept allowing specific aircraft and control station configurations to be tailored to fit mission needs.

The MQ-1 Predator aircraft is a single-engine, propeller-driven, remotely piloted aircraft (formerly called unmanned aerial vehicle) designed to operate over-the-horizon at medium altitude for long endurance sorties. The aircraft is designed to provide real-time Intelligence, Surveillance, Reconnaissance, and Target Acquisition (ISR TA), and attack roles to aggressively prosecute Time Sensitive Targets (TST). The MQ-1 will operate primarily at medium altitudes, integrating with joint aerospace, ground, and maritime forces as well as coalition and Allied forces, to execute combatant commander priority missions. The aircraft carries a Multi-spectral Targeting System (MTS) (a sensor turret that incorporates electro-optical (EO), Infra-Red (IR), laser designator/marker, and IR illuminator) capable of transmitting real-time motion imagery throughout the operational theater. Additionally the aircraft is multi-configurable to carry either a synthetic aperture radar (SAR) or Hellfire laser-guided missiles. This program will continue to evolve and upgrade MQ-1 capabilities to meet emerging requirements and address reliability and maintainability (R&M) issues.

The MQ-9 Predator B aircraft is a single-engine, turbo-prop remotely piloted aircraft designed to operate over-the-horizon at medium-to-high altitude for long endurance sorties. The aircraft is being designed primarily to prosecute critical emerging TSTs as a radar-based attack asset with on-board hard-kill capability (hunter-killer) and also perform ISR TA as a secondary role. In the hunter-killer role, the aircraft will employ fused multi-spectral sensors to automatically find, fix, and track ground targets (Automatic Target Cueing (ATC)) and assess post-strike results. The MQ-9 is in continuing development and will field capability through incremental (Block) upgrades. The next step will be to develop and test a "baseline" capable system. The "baseline" development includes both a risk reduction phase, FY04 & FY05 Quick Reaction Capabilities, and a System Development & Demonstration (SDD) phase. Risk reduction started in FY03 and includes system design, drawings, specifications, and initial standardized (MIL-STD-1760) advanced weapons data bus efforts. The SDD effort began in FY05 and includes developing and testing the MQ-9's baseline capability. The baseline capability will include increasing the aircraft's gross take-off weight; enhancing aircraft systems to include integrated redundant avionics, ice detection capability, navigation system upgrades, electrical system upgrades, sensor/stores management computer, MIL-STD-1760 advanced weapons data bus, advanced sensor and weapons payloads, and improved human-machine interface; integrating standard "precision" weapons (GBU-12/38); hardware and software upgrades to the ground control station (GCS) for MQ-9 operations; completing airworthiness certification and accreditation; and producing applicable training devices that emulate aircraft capabilities. Subsequent block upgrades will continue to evolve the MQ-9's capabilities to meet new requirements and address R&M issues.

Approximately 20 Predator B aircraft will be purchased prior to completion of SDD largely through Congressional and OSD funding adds. To maintain a basic

operational capability, these aircraft will require reliability/maintainability development to keep them viable for SDD and/or to provide an interim operational combat capability.

The Ground Control Station (GCS) functions as the aircraft cockpit and can control the aircraft either within line-of-sight (LOS) or beyond LOS (BLOS) via a combination of satellite relay and terrestrial communications. The GCS is either mobile to support forward operating locations or fixed at a facility to support Remote Split Operations (RSO). A mobile GCS is containerized for deployability while a fixed facility GCS consists of similar capability in a permanent facility. The GCS has the capability to perform mission planning; provide a means for manual and/or autonomous control of multiple aircraft and payloads; allow personnel to launch, recover, and monitor aircraft, payloads, and system communications status; secure data links to receive payload sensor data and command links; monitor threats to the aircraft; display common operation picture; and provide support functions. Additionally, a Launch and Recover GCS (LRGCS) allows for servicing, systems checks, maintaining, launching, and recovering aircraft under LOS control for hand-off to a mobile or fixed GCS. The GCS will continue to evolve and upgrade its capabilities to fully support the MQ-1 and MQ-9 aircraft and the missions they perform.

This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

This program is budget activity 7, Operational Systems Development, because it involves Air Force R&D to field a highly capable operational system and provide essential operational capabilities.

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

		FY 2004	FY 2005	FY 2006	FY 2007
(U)	Previous President's Budget		81.346	66.466	26.783
(U)	Current PBR/President's Budget	0.000	83.207	61.007	32.125
(U)	Total Adjustments	0.000	1.861		
(U)	Congressional Program Reductions				
	Congressional Rescissions		-0.739		
	Congressional Increases		2.600		
	Reprogrammings				
	SBIR/STTR Transfer				

(U) Significant Program Changes:

Funding ramps down from FY05 to FY07 as MQ-9 SDD nears completion.

Exhibit R-2a, RDT&E Project Justification

DATE: February 2005

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0305219F PREDATOR DEVELOPMENT/FIELDING

PROJECT NUMBER AND TITLE: 5143 Predator

Cost ($ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5143 Predator	0.000	83.207	61.007	32.125	27.705	24.651	25.222	25.658	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

In FY2005, this is a new PE. In FY2005, Project 5143, Predator, was transferred from PE 0305205F, Unmanned Aerial Vehicles, Project 4755, Predator, in order to better manage Predator funds.

(U) A. Mission Description and Budget Item Justification

The basic MQ-1/MQ-9 system consists of the aircraft, a control station, communications equipment, support equipment, readiness spares packages (RSP), technical data/training, and personnel required to operate, maintain, and sustain the system. The system is designed to be modular and open-ended: mission-specific equipment is employed in a 'plug-and-play' mission kit concept allowing specific aircraft and control station configurations to be tailored to fit mission needs.

The MQ-1 Predator aircraft is a single-engine, propeller-driven, remotely piloted aircraft (formerly called unmanned aerial vehicle) designed to operate over-the-horizon at medium altitude for long endurance sorties. The aircraft is designed to provide real-time Intelligence, Surveillance, Reconnaissance, and Target Acquisition (ISR TA), and attack roles to aggressively prosecute Time Sensitive Targets (TST). The MQ-1 will operate primarily at medium altitudes, integrating with joint aerospace, ground, and maritime forces as well as coalition and Allied forces, to execute combatant commander priority missions. The aircraft carries a Multi-spectral Targeting System (MTS) (a sensor turret that incorporates electro-optical (EO), Infra-Red (IR), laser designator/marker, and IR illuminator) capable of transmitting real-time motion imagery throughout the operational theater. Additionally the aircraft is multi-configurable to carry either a synthetic aperture radar (SAR) or Hellfire laser-guided missiles. This program will continue to evolve and upgrade MQ-1 capabilities to meet emerging requirements and address reliability and maintainability (R&M) issues.

The MQ-9 Predator B aircraft is a single-engine, turbo-prop remotely piloted aircraft designed to operate over-the-horizon at medium-to-high altitude for long endurance sorties. The aircraft is being designed primarily to prosecute critical emerging TSTs as a radar-based attack asset with on-board hard-kill capability (hunter-killer) and also perform ISR TA as a secondary role. In the hunter-killer role, the aircraft will employ fused multi-spectral sensors to automatically find, fix, and track ground targets (Automatic Target Cueing (ATC)) and assess post-strike results. The MQ-9 is in continuing development and will field capability through incremental (Block) upgrades. The next step will be to develop and test a "baseline" capable system. The "baseline" development includes both a risk reduction phase, FY04 & FY05 Quick Reaction Capabilities, and a System Development & Demonstration (SDD) phase. Risk reduction started in FY03 and includes system design, drawings, specifications, and initial standardized (MIL-STD-1760) advanced weapons data bus efforts. The SDD effort began in FY05 and includes developing and testing the MQ-9's baseline capability. The baseline capability will include increasing the aircraft's gross take-off weight; enhancing aircraft systems to include integrated redundant avionics, ice detection capability, navigation system upgrades, electrical system upgrades, sensor/stores management computer, MIL-STD-1760 advanced weapons data bus, advanced sensor and weapons payloads, and improved human-machine interface; integrating standard "precision" weapons (GBU-12/38); hardware and software upgrades to the ground control station (GCS) for MQ-9 operations; completing airworthiness certification and accreditation; and producing applicable training devices that emulate aircraft capabilities. Subsequent block upgrades will continue to evolve the MQ-9's capabilities to meet new requirements and address R&M issues.

Exhibit R-2a, RDT&E Project Justification		DATE February 2005
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0305219F PREDATOR DEVELOPMENT/FIELDING**	PROJECT NUMBER AND TITLE **5143 Predator**

Approximately 20 Predator B aircraft will be purchased prior to completion of SDD largely through Congressional and OSD funding adds. To maintain a basic operational capability, these aircraft will require reliability/maintainability development to keep them viable for SDD and/or to provide an interim operational combat capability.

The Ground Control Station (GCS) functions as the aircraft cockpit and can control the aircraft either within line-of-sight (LOS) or beyond LOS (BLOS) via a combination of satellite relay and terrestrial communications. The GCS is either mobile to support forward operating locations or fixed at a facility to support Remote Split Operations (RSO). A mobile GCS is containerized for deployability while a fixed facility GCS consists of similar capability in a permanent facility. The GCS has the capability to perform mission planning; provide a means for manual and/or autonomous control of multiple aircraft and payloads; allow personnel to launch, recover, and monitor aircraft, payloads, and system communications status; secure data links to receive payload sensor data and command links; monitor threats to the aircraft; display common operation picture; and provide support functions. Additionally, a Launch and Recover GCS (LRGCS) allows for servicing, systems checks, maintaining, launching, and recovering aircraft under LOS control for hand-off to a mobile or fixed GCS. The GCS will continue to evolve and upgrade its capabilities to fully support the MQ-1 and MQ-9 aircraft and the missions they perform.

This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

This program is budget activity 7, Operational Systems Development, because it involves Air Force R&D to field a highly capable operational system and provide essential operational capabilities.

(U)	**B. Accomplishments/Planned Program ($ in Millions)**	FY 2004	FY 2005	FY 2006	FY 2007
(U)	MQ-9 Risk Reduction & Quick Reaction Capability. Includes initial integration of weapons, engine, power upgrades, and tech data.		34.846		
(U)	MQ-1/MQ-9 Pre-planned Product Improvement. Includes advanced capabilities (including multiple aircraft control/operations), sensor integration, quick reaction capabilities, payload development/integration, weaponization and experimentation, data link upgrades (including encryption and tactical common data link (TCDL)), mission planning capability, simulator/training devices, and associated ground station and communication equipment development/upgrades.		18.900	2.300	6.300
(U)	MQ-9 System Development and Demonstration (SDD). Includes aircraft/GCS/Communication system improvements, development and integration of follow-on sensors, weapon and payload integration , test and training capability, technical data.		15.621	40.169	14.733
(U)	Continue reliability and maintainability efforts to ensure the continued viability of the MQ-1/MQ-9 aircraft, GCS, and associated communications equipment.		0.500	0.500	0.500
(U)	System Concept Studies		1.500	1.500	1.500
(U)	Developmental and Operational Test support. Includes SATCOM leases		5.400	5.038	2.792
(U)	Simulator/training device		5.000	10.000	5.000

Exhibit R-2a, RDT&E Project Justification		DATE February 2005
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305219F PREDATOR DEVELOPMENT/FIELDING	PROJECT NUMBER AND TITLE 5143 Predator

(U)	Field support						1.440	1.500	1.300	
(U)	Total Cost					0.000	83.207	61.007	32.125	

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

		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
(U)	Other APPN RDT&E, AF (PE 0305205F/Project 4755), Predator	40.162									
(U)	Aircraft Procurement, AF (PE 0305205F), Predator	202.000									
(U)	Aircraft Procurement, AF (PE 0305219F)		173.906	125.566	77.166	94.643	172.245	176.627	178.666	Continuing	TBD
(U)	Aircraft Modification, AF (PE 0305205F), Predator	13.704									
(U)	Aircraft Modification, AF (PE 0305219F)		31.387	30.286	22.101	20.897	21.710	22.255	22.517	Continuing	TBD
(U)	Aircraft Initial Spares, AF (PE 0305205F), Predator	0.377									
(U)	Missile Procurement, AF (PE 0305205F), Predator	14.589									
(U)	Missile Procurement, AF (PE 0305219F)		19.940	38.135	37.687	21.401	21.980	22.493	22.889	Continuing	TBD

(U) D. Acquisition Strategy

Both the MQ-1 Predator and MQ-9 Predator B systems will be acquired sole-source through the BIG SAFARI Program Office with General Atomics-ASI as the prime contractor.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2005**

BUDGET ACTIVITY: **07 Operational System Development**

PE NUMBER AND TITLE: **0305219F PREDATOR DEVELOPMENT/FIELDING**

PROJECT NUMBER AND TITLE: **5143 Predator**

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2004 Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development														
General Atomics ASI (GA-ASI)	SS/CPIF/ CPFF	GA-ASI Rancho Bernardo CA				71.097	Feb-05	42.899	Feb-06	23.375	Feb-07	Continuing	TBD	
Navy Crane	MIPR	Raytheon McKinney TX				1.250	Feb-05	1.250	Feb-06	1.250	Feb-07	Continuing	TBD	
ASC/YW	CPFF	Wright-Patterson AFB OH				5.000	Feb-05	10.000	Feb-06	5.000	Feb-07	0.000	20.000	
Subtotal Product Development			0.000	0.000		77.347		54.149		29.625		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F														
(U) Support														
ASC	SS/T&M	Various Wright-Patterson AFB OH				1.500	Feb-05	1.500	Feb-06	1.500	Feb-07	Continuing	TBD	
Subtotal Support			0.000	0.000		1.500		1.500		1.500		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F; Includes management of RDT&E activities														
(U) Test & Evaluation														
Misc	Various	Various				4.360	Feb-05	5.358	Feb-06	1.000	Feb-07	Continuing	TBD	
Subtotal Test & Evaluation			0.000	0.000		4.360		5.358		1.000		Continuing	TBD	0.000
Remarks: FY04 and prior reported in PE 0305205F														
(U) Total Cost			0.000	0.000		83.207		61.007		32.125		Continuing	TBD	0.000

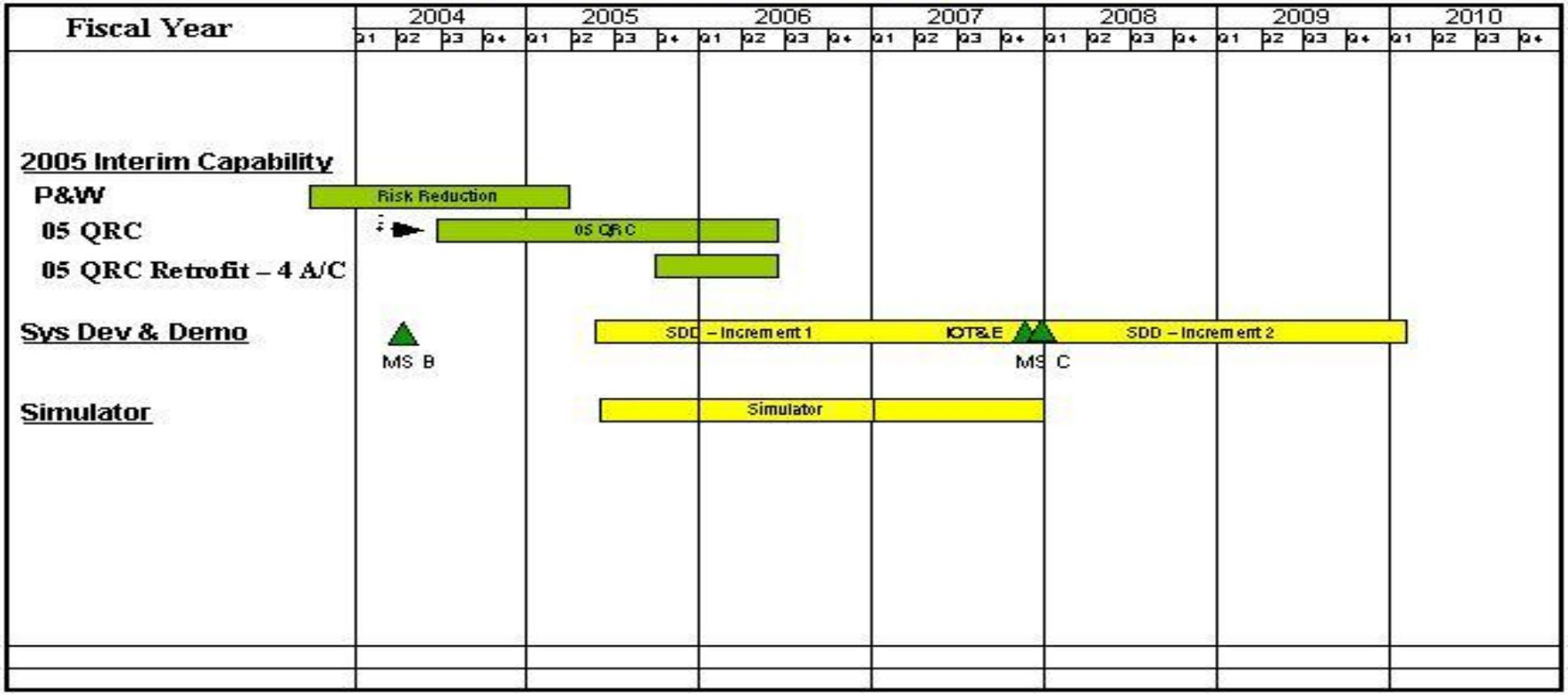
Exhibit R-4, RDT&E Schedule Profile		DATE: February 2005
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305219F PREDATOR DEVELOPMENT/FIELDING	PROJECT NUMBER AND TITLE: 5143 Predator

For Official Use Only

MQ-9 Program Plan

U.S. AIR FORCE

Rapidly delivering war-winning capability



MQ-9 Development

1

On Contract

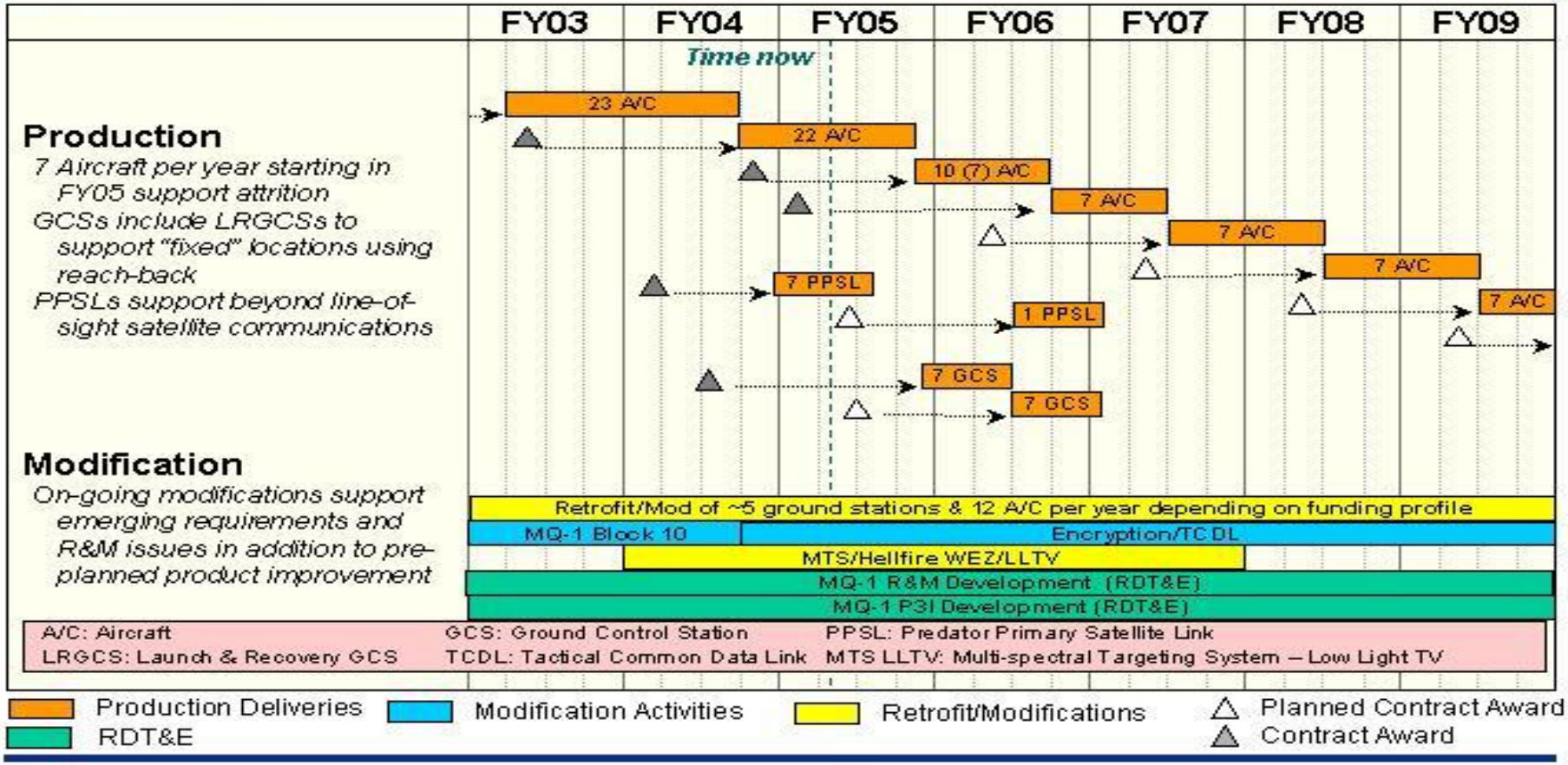
Awaiting Contract

Current As of: 13 Jan 05

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2005
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305219F PREDATOR DEVELOPMENT/FIELDING	PROJECT NUMBER AND TITLE: 5143 Predator

MQ-1 Program Plan

U.S. AIR FORCE



As of: 12 Jan 05

Exhibit R-4a, RDT&E Schedule Detail		DATE: February 2005
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305219F PREDATOR DEVELOPMENT/FIELDING	PROJECT NUMBER AND TITLE: 5143 Predator

(U) Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007
(U) MQ-9 Risk Reduction Complete		2Q		
(U) MQ-9 SDD Start		2Q		
(U) MQ-9 05 Quick Reaction Capability Start	3Q			
(U) MQ-9 05 Quick Reaction Capability Complete			2Q	
(U) MQ-9 IOT&E Start				4Q