PE NUMBER: 0604830F
PE TITLE: Automated Air-to-Air Refueling

Exhibit R-2, RDT&E Budget Item Justification	DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0604830F Automated Air-to-Air Refueling

	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	0.000	9.862	43.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2214	Optionally Unmanned Development	0.000	9.862	43.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000

(U) A. Mission Description and Budget Item Justification

This program develops, demonstrates, and validates the ability to air refuel aircraft without the intervention of a pilot in the receiving craft to enable the Global Strike, Global Persistent Attack, Global Mobility, and C4ISR CONOPS. Program efforts support the Next Generation Long Range Strike capability and the Next Generation Bomber (NGB) development strategies.

Capability improvements result from extending the operating range and in-flight endurance of current and future manned, unmanned, and optionally unmanned systems.

This funding supports development, demonstration, and validation of technologies for precision navigation and flight control with redundancy to ensure safety of flight. It continues with development and demonstration of technologies for sensors and flight controls to ensure collision avoidance and contingency management; modeling and simulation for technique development and risk reduction; and development and demonstration of command and control strategies, including at beyond-line-of-sight distances. This includes design and demonstration of an AAR-related datalink capability, which enables net-centric sensor technologies to correlate information among multiple platforms and precisely locate time-critical targets.

This effort is not a New Start because it received funding in prior years under PE 0604015F and in FY09 under this PE 0604830F. From FY04-08, the Next Generation Bomber PE 0604015F funded critical technology maturation and risk reduction efforts that could feed into a long-range strike platform in the future. AAR Phase II is a critical technology for future manned and unmanned long-range strike operations. AAR Phase I technology has been demonstrated, but it requires additional maturation, development, and integration to be demonstrated for operational utility.

Automated Air-to-Air Refueling is categorized as a Budget Activity 4, Advanced Component Development, and Prototypes, since advanced technologies will be explored and integrated for demonstration in a realistic operating environment.

Exhibit R-2, RDT&E Budget Item Justification	DATE May 2009
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0604830F Automated Air-to-Air Refueling

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

		FY 2008	FY 2009	FY 2010
(U)	Previous President's Budget	0.000	9.889	44.448
(U)	Current PBR/President's Budget	0.000	9.862	43.158
(U)	Total Adjustments	0.000	-0.027	
(U)	Congressional Program Reductions			
	Congressional Rescissions		-0.027	
	Congressional Increases			
	Reprogrammings			
	SBIR/STTR Transfer			
(U)	Significant Program Changes:			
	None			

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0604830F Automated Air-to-Air Refueling	PROJECT NUMBER AND TITLE: 2214 Optionally Unmanned Development	

	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
2214	Optionally Unmanned Development	0.000	9.862	43.158	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		

(U) A. Mission Description and Budget Item Justification

This program develops, demonstrates, and validates the ability to air refuel aircraft without the intervention of a pilot in the receiving craft to enable the Global Strike, Global Persistent Attack, Global Mobility, and C4ISR CONOPS. Program efforts support the Next Generation Long Range Strike capability and the Next Generation Bomber (NGB) development strategies.

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This effort is not a New Start because it received funding in prior years under PE 0604015F and in FY09 under this PE 0604830F. From FY04-08, the Next Generation Bomber PE 0604015F funded critical technology maturation and risk reduction efforts that could feed into a long-range strike platform in the future. AAR Phase II is a critical technology for future manned and unmanned long-range strike operations. AAR Phase I technology has been demonstrated, but it requires additional maturation, development, and integration to be demonstrated for operational utility.

Automated Air-to-Air Refueling is categorized as a Budget Activity 4, Advanced Component Development, and Prototypes, since advanced technologies will be explored and integrated for demonstration in a realistic operating environment.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	In FY 2009: Develop flight control and precision navigation (PGPS) systems for initial capability of automated air-to-air refueling (AAR).		9.862	
(U)	In FY 2010: Integrate and start testing automated air-to-air refueling flight controls and precision navigation initial capability using a KC-135 tanker and a limited test aircraft. Prepare test resources for automated air-to-air refueling systems to allow for receiving aircraft to take on fuel from tanker aircraft. Start evaluation of Non-GPS/Hybrid AAR positioning system enhancements to allow for a full AAR capability.			43.158
(U)	Total Cost	0.000	9.862	43.158

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0604830F Automated Air-to-Air Refueling	PROJECT NUMBER AND TITLE: 2214 Optionally Unmanned Development

(U) C. Other Program Funding Summary ($ 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 Cost
(U) Appn 28, PE 0604015F, Next Generation Bomber	7.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		7.000

(U) D. Acquisition Strategy

Principal acquisitions to be performed through Broad Area Announcements (BAA) resulting in competitive Cost Plus Fixed Fee contracts.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE: 0604830F Automated Air-to-Air Refueling

PROJECT NUMBER AND TITLE: 2214 Optionally Unmanned Development

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Precision GPS Development	CPFF	Northrop Grumman, Woodland Hills, CA	0.000			4.000	Oct-08	6.000		Continuing	TBD	
Tactical Targeting Network Technology (TTNT)	CPFF	Rockwell Collins, Cedar Rapids IA	0.000			0.100	Oct-08	0.200		Continuing	TBD	
Phase II System Development and Demonstration	CPFF	TBD (released BAA in Apr 08)	0.000			3.900	Oct-08	20.260		Continuing	TBD	
Sensor Augmented Navigation Development	CPFF	TBD				0.000		2.000	Dec-09	Continuing	TBD	
Subtotal Product Development			0.000	0.000		8.000		28.460		Continuing	TBD	0.000
Remarks:												
(U) Support											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Test & Evaluation												
Precision GPS Testing			0.000			0.100		0.500		Continuing	TBD	
Tanker Modification Development	T&M	Rockwell Collins, Oklahoma City, OK				0.300	Sep-08	1.500		Continuing	TBD	
Refueling Receiver Development	CPFF	Calspan, Buffalo, NY				0.200	Sep-08	4.000		Continuing	TBD	
VISTA F-16 Development	CPFF	Lockheed Martin, Ft Worth, TX				0.000		2.000	Dec-09	Continuing	TBD	
Flight Test						0.350		4.198		Continuing	TBD	
Subtotal Test & Evaluation			0.000	0.000		0.950		12.198		Continuing	TBD	0.000
Remarks:												
(U) Management												
Program Management			0.000			0.912		2.500		Continuing	TBD	
Subtotal Management			0.000	0.000		0.912		2.500		Continuing	TBD	0.000
Remarks:												
(U) Total Cost			0.000	0.000		9.862		43.158		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile		DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0604830F Automated Air-to-Air Refueling	PROJECT NUMBER AND TITLE: 2214 Optionally Unmanned Development

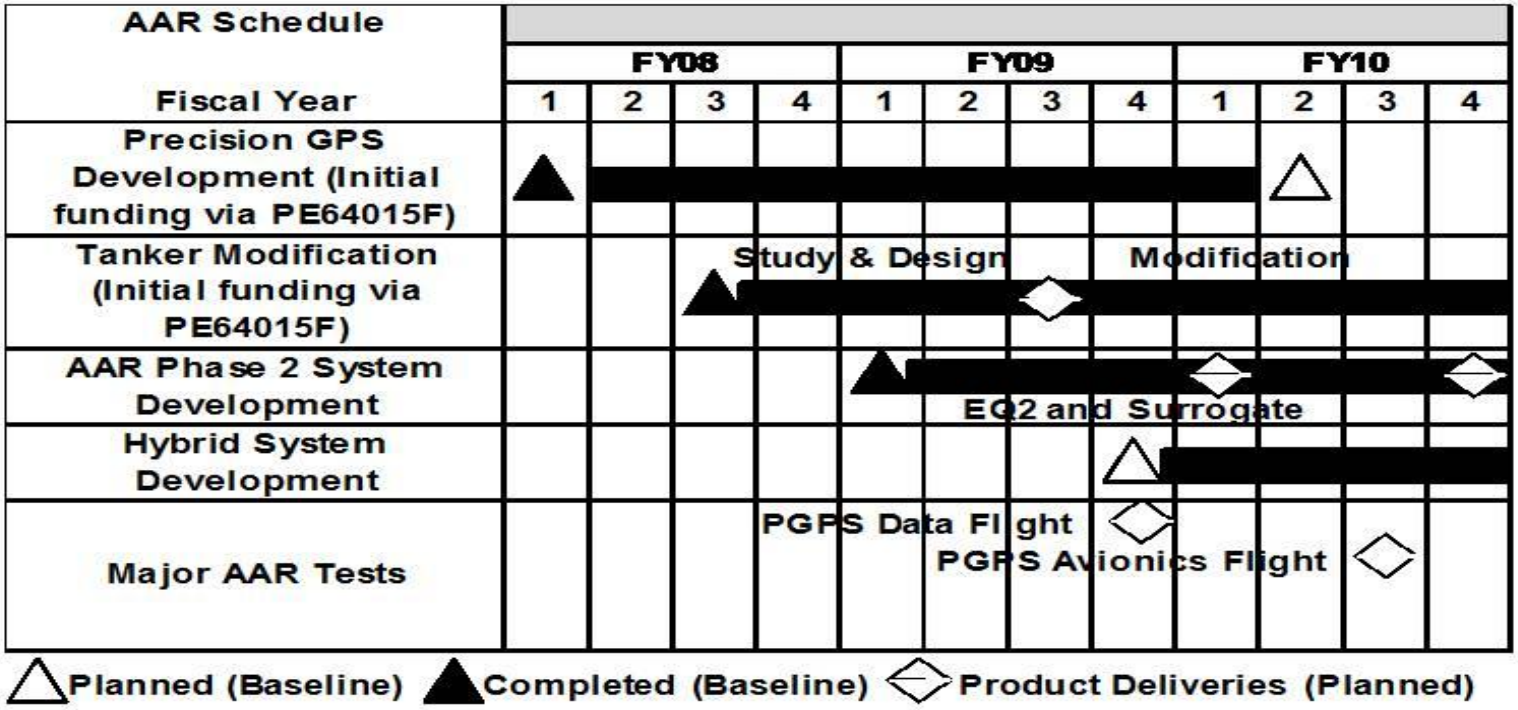

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **04 Advanced Component Development and Prototypes (ACD&P)**	PE NUMBER AND TITLE **0604830F Automated Air-to-Air Refueling**	PROJECT NUMBER AND TITLE **2214 Optionally Unmanned Development**

(U) Schedule Profile	FY 2008	FY 2009	FY 2010
(U) Phase II SDD Integrator Contract Award		1Q	
(U) Tanker Modification Critical Design Review		2Q	
(U) Precision GPS Data Collection Flight Test		3Q	
(U) Precision GPS Avionics Flight Test			3Q

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