PE NUMBER: 0603791F
PE TITLE: International Space Cooperative R&D

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: 0603791F International Space Cooperative R&D

	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	0.593	0.620	0.632	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5035	Intl Space Coop R&D	0.593	0.620	0.632	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

These funds will be used to help implement space-related international cooperative research, development, and acquisition (ICRD&A) agreements with North Atlantic Treaty Organization (NATO) member states and major non-NATO allies and friendly foreign countries. The program implements the provisions of Title 10 U.S. Code, Section 2350a on NATO Cooperative Research and Development (R&D). The program was established to improve cooperation among NATO nations, and later major non-NATO allies, in research, development, and acquisition. The legislation authorized funds to significantly improve United States (US) and allied conventional defense capabilities by leveraging the best defense technologies, eliminating costly duplication of R&D efforts, accelerating the availability of defense systems, and promoting US and allied interoperability or commonality. The program will be reported as required by Title 10 U.S. Code, Section 2350a(f). This program element funds the implementation of space-related Air Force ICRD&A agreements in (1) Basic Research (2) Applied Research (3) Advanced Technology Development (4) Advanced Component Development and Prototypes (5) System Development and Demonstration and (6) RDT&E Management Support. This PE is designated in Budget Activity 4 because most of the ICRD&A projects support specific systems, include all efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology, and help expedite technology transition from the laboratory to operational use.

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

		FY 2008	FY 2009	FY 2010
(U)	Previous President's Budget	0.593	0.620	0.643
(U)	Current PBR/President's Budget	0.593	0.620	0.632
(U)	Total Adjustments	0.000	0.000	
(U)	Congressional Program Reductions			
	Congressional Rescissions			
	Congressional Increases			
	Reprogrammings			
	SBIR/STTR Transfer			
(U)	Significant Program Changes:			

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603791F International Space Cooperative R&D	PROJECT NUMBER AND TITLE: 5035 Intl Space Coop R&D	

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
5035 Intl Space Coop R&D	0.593	0.620	0.632	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

These funds will be used to help implement space-related international cooperative research, development, and acquisition (ICRD&A) agreements with North Atlantic Treaty Organization (NATO) member states and major non-NATO allies and friendly foreign countries. The program implements the provisions of Title 10 U.S. Code, Section 2350a on NATO Cooperative Research and Development (R&D). The program was established to improve cooperation among NATO nations, and later major non-NATO allies, in research, development, and acquisition. The legislation authorized funds to significantly improve United States (US) and allied conventional defense capabilities by leveraging the best defense technologies, eliminating costly duplication of R&D efforts, accelerating the availability of defense systems, and promoting US and allied interoperability or commonality. The program will be reported as required by Title 10 U.S. Code, Section 2350a(f). This program element funds the implementation of space-related Air Force ICRD&A agreements in (1) Basic Research (2) Applied Research (3) Advanced Technology Development (4) Advanced Component Development and Prototypes (5) System Development and Demonstration and (6) RDT&E Management Support. This PE is designated in Budget Activity 4 because most of the ICRD&A projects support specific systems, include all efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology, and help expedite technology transition from the laboratory to operational use.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U) Forecasting Communication and Navigation Disruptions due to Inonspheric Disturbance During Solar Minumum (AFRL and Australia) - Cooperative project to collaborate with Australia to study ionospheric phenomena which impact communication, navigation and radio frequency (RF) surveillance systems. The key research focus will be on forecasting ionospheric disturbances and their impact on systems such as Ultra High Frequency (UHF) Satellite Communication (SATCOM) and GLOBAL Positioning System (GPS) navigation.	0.375	0.000	0.000
(U) Multidemsional Diffusion of High Energy Radiation Belt Electrons (AFRL and UK) - Cooperative project to study high energy electrons constituting the radiation belts are a primary hazard for USAF and other satellites. They are often enhanced during geomagnetic storms, but not in a reliably predictable way. Thus, understanding and forecasting their behavior is a major research goal. The physics of the radiation belts is believed to be largely controlled by electromajnetic waves, which casue diffusion in the otherwise constant particle energy, equatorial pitch angle, and radial distance.	0.218	0.220	0.000
(U) Surveillance and Military Utility of Hyperspectral Imagery in the Reflective and Emissive Spectral Bands (AFRL and Australia) - Cooperative project will advance imaging spectroscopy for military remote sensing in two ways. The first and initial focus of the effort will be the quantification of the military utility of space-based hyperspectral imagery in the reflective spectrum (0.38 to 2.5 microns) utilizing extensive datasets taken with the	0.000	0.400	0.400

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603791F International Space Cooperative R&D	PROJECT NUMBER AND TITLE: 5035 Intl Space Coop R&D

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
	TacSat-3/Advanced Responsive Tactically Effective Military Imaging Spectrometer over both U. S. and Australian sites.			
(U)	Energy Transport by Neutral Winds During Magnetic Storms (AFRL and France) - Cooperative project to develop a database of neutral wind values in the Ionophere-Thermosphere, using the Neutral Wind Meter on Comm/Nav outage Forcast System together with the STAR accelerometers on the CHAMP and GRACE spacecraft. This research will establish a set of unprecedented neutral wind values and allow for the first reliable estaime of neutral energy transport during storms.	0.000	0.000	0.232
(U)	Management and administrative support and travel	0.000	0.000	0.000
(U)	Total Cost	0.593	0.620	0.632

(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) N/A										

(U) D. Acquisition Strategy

A principal goal of the International Space Cooperative R&D program is to effectively utilize the aggregate resources invested by the US and our allies in space-related R&D. This program element provides the critical funding incentive needed to pursue space-related ICRD&A agreements and helps to (a) leverage USAF and allied resources through cost sharing and economies of scale; (b) exploit the best US and allied technologies for equipping coalition forces; (c) demonstrate areas of commonality or interoperability with our allies; and (d) accelerate the availability of defense technology and systems. Candidate projects are reviewed and approved by the USD(AT&L). An international agreement defining project objectives, responsibilities and costs is required prior to release of funds. To obtain these funds and ensure service commitment, projects are selected from existing or new space-related RDT&E programs funded in the Future Years Defense Plan (FYDP). Project offices must show matching funds and contributions from associated program elements and equitable allied funding. As appropriate, funding responsibility for out-year requirements and follow-on efforts are transferred to the project office and associated program elements. Most contracts are awarded after full and open competition.

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: 0603791F International Space Cooperative R&D

PROJECT NUMBER AND TITLE: 5035 Intl Space Coop R&D

(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												
NONE	TBD										0.000	TBD
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	TBD
Remarks:												
(U) Support												
AFRL, WPAFB	BA			0.100	Feb-08	0.127	Feb-09	0.143	Feb-10	Continuing	TBD	TBD
AFRL EDWARDS AFB, CA	BA			0.400	Feb-08	0.493	Feb-09	0.389	Feb-10	Continuing	TBD	TBD
Subtotal Support			0.000	0.500		0.620		0.532		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation												
AFRL EDWARDS AFB, CA	TBD			0.093	Mar-08			0.100	Mar-10	Continuing	TBD	TBD
Subtotal Test & Evaluation			0.000	0.093		0.000		0.100		Continuing	TBD	TBD
Remarks:												
(U) Management												
NONE	TBD										0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			0.000	0.593		0.620		0.632		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603791F International Space Cooperative R&D	PROJECT NUMBER AND TITLE 5035 Intl Space Coop R&D

ICR&D Project	Fiscal Year	Start Date	End IA	PE
Forecasting Communication and Navigation Disruptions due to Inonspheric Disturbance During Solar Minumum	FY06	2007	2011	63791F
Multidemsional Diffusion of High Energy Radiation Belt Electrons	FY07	2008	2013	63791F
Surveillance and Military Utility of Hyperspectral Imagery in the Reflective and Emissive Spectral Bands	FY09	2009	2014	63791F
Energy Transport by Neutral Winds During Magnetic Storms	FY10	2010	2015	63791F

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **04 Advanced Component Development and Prototypes (ACD&P)**	PE NUMBER AND TITLE **0603791F International Space Cooperative R&D**	PROJECT NUMBER AND TITLE **5035 Intl Space Coop R&D**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) Forecasting Comm. and Navigation Disruption due to Ionospheric Disturbances During Solar Minimum	1Q		
(U) - Final Report	4Q		
(U) Multidimensional Diffusion of High Energy Radiation Belt Electrons	1Q		
(U) - Study	1-4Q	1-2Q	
(U) - Final Report		4Q	
(U) Surveillance and Military Utility of Hyperspectral Imagery in the Reflective and Emissive Spectral Bands		1Q	
(U) - Technical development		1-4Q	
(U) - Test and anylsis			1-4Q
(U) - Final Report			
(U) Energy Transport by Neutral Winds During Magnetic Storms			1Q
(U) - Technical Development			1-4Q