Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	133.785	93.978	86.543	-	86.543	76.386	52.739	123.454	125.566	Continuing	Continuing
64A015: *ORS Common Services*	23.165	19.450	13.169	-	13.169	13.263	13.539	13.587	13.687	Continuing	Continuing
64A020: *AF Funded ORSSats*	110.620	74.528	73.374	-	73.374	63.123	39.200	109.867	111.879	Continuing	Continuing

Note

The program funding includes overhead reduction efficiencies that are not intended to impact program content. The efficiencies reductions total $1.187 in FY12.

A. Mission Description and Budget Item Justification

The successful integration of space-based capabilities into the core of U.S. national security operations has resulted in dramatically increased demand for and dependence upon space capabilities. As a result, U.S. Strategic Command (USSTRATCOM) identified three needs: 1) to rapidly augment existing space capabilities when needed to expand operational capability; 2) to rapidly reconstitute/replenish critical space capabilities to preserve “continuity of operations” capability; 3) to rapidly exploit and infuse space technological or operational innovations to increase U.S. advantage. Operationally Responsive Space (ORS) is designed to both improve the responsiveness of existing space capabilities (e.g., space, launch, and ground segments) and to develop complementary, affordable small satellite/launch vehicle combinations, and associated ground and command and control systems, that can be deployed in operationally relevant timeframes.

ORS is defined as "assured space power focused on timely satisfaction of Joint Force Commanders' needs." The ORS goals are to: 1) Improve robustness--provide a focused, limited capability to augment and reconstitute, with assured warfighter access and control. 2) Respond to urgent needs--deliver effects to joint warfare in response to an urgent or previously unanticipated need. 3) Reduce development/deployment time and cost--complement existing space capabilities with an element focused on increased value and timely delivery. 4) Capitalize on emerging/innovative capabilities--adopt new capabilities from advanced technologies and innovative operational concepts.

When enabling responsiveness conditions are fully established, commanders will have three "tiers" of ORS capabilities for meeting urgent needs. Tier-1 uses existing space systems, operations, and processes to provide highly responsive space effects in minutes to days from when the need is established. Although mission or system utilization analyses may be needed, Tier-1 solutions will not typically involve new material items. The targeted timeframe for deploying usable Tier-2 solutions is days to weeks from the time the JFC need is established. Tier-2 solutions focus on reconstitution, augmentation, or replenishment, of space capabilities through rapid assembly, integration, testing, and deployment of small, low cost satellites. Tier-3 focuses on maturing enablers (launch, range, bus, payloads, command and control, ground architectures, and authorities) necessary to meet future Tier-2 and Tier-3 timelines and on developing new assets rapidly when JFC needs cannot be addressed through Tier-1 or Tier-2 capabilities. Once developed, Tier-3 capabilities will be responsively deployed and employed in the same way as Tier-2 assets. The goal of executing Tier-3 is months to one year from established need to presentation of operational capability.

ORS program funds (along with other Service and Agency funds) are programmed to systematically mature ORS enabling infrastructure to meet the responsiveness timelines required by the USSTRATCOM CONOPS (hours, days, weeks, months...not years) and achieve the price points established in the 2007 NDAA ($40M

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*

satellite vehicles / $20M launches). This includes the development of a modular, open-system architecture, including plug and play concepts, to enhance the rapid assembly and integration of mission-specific elements into operational satellites. A focus for these efforts will be the Rapid Response Space Works (RRSW).

ORS will fully develop and demonstrate the end-to-end capability of RRSW by producing an operational, modular Synthetic Aperture Radar (SAR) satellite prototype through the RRSW under specific time constraints. This demonstration of rapid assembly, integration and testing (AI&T) will be in accordance with a concept of operations that dictates a 6-day call up prior to mission launch. In addition to providing operational capability, RRSW will remain a critical enabler for sustained, repeatable AI&T for subsequent satellite vehicles and a means to incorporate innovation while leveraging existing efficiencies. Demonstration and validation of this process is key to ORS's ability to meet future warfighter needs in a responsive manner.

ORS funds will also fund TacSat and ORS launch vehicles and operations support; fund transition of TacSat demos to operational capabilities; and acquire and deploy operational satellites in response to USSTRATCOM urgent needs. When ORS-appropriate USSTRATCOM urgent needs arise during execution year, programmed ORS projects may be modified or delayed to meet those urgent needs.

This program is Budget Activity 04, Advanced Component Development and Prototypes, because it involves operational experimentation and evaluating integrated technologies to assess the performance or cost reduction potential of advanced technologies.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	124.308	93.978	88.019	-	88.019
Current President's Budget	133.785	93.978	86.543	-	86.543
Total Adjustments	9.477	-	-1.476	-	-1.476
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	9.477	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.476	-	-1.476

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 64A015: *ORS Common Services*		
Congressional Add: *LEONIDAS*	4.750	-
Congressional Add: *Micro-Satellite Serial Manufacturing to include Academic Outreach*	1.200	-
Congressional Add: *Space Sensor Data Link Technology*	4.800	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *Rapid Small Satellite Development Test Facilities*	1.600	-
Congressional Add Subtotals for Project: 64A015	12.350	-
Congressional Add Totals for all Projects	12.350	-

Change Summary Explanation

FY2010: +$9.477M reprogrammed to complete the FY10 funding requirements for ORS-1.
FY2012: -$1.187M reprogrammed due to overhead reduction efficiencies; -$0.289M for other AF priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A015: *ORS Common Services*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
64A015: *ORS Common Services*	23.165	19.450	13.169	-	13.169	13.263	13.539	13.587	13.687	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

ORS Common Services supports the entire ORS partnership (Services, Intelligence Community, Reserve Component, NASA, and our Allies). These activities include studies and analysis to maintain the ORS investment roadmap and coordination and planning activities across the ORS Enterprise. ORS Common Services works with Joint Force Commanders (JFC) and the Services to identify the most likely emergent space needs, make plans and preparations to meet those needs, evaluate results of operational experimentation, and prepare plans and procedures for operational employment and transition. These foundational activities ensure ORS enabler investments are optimally targeted to quickly mature ORS's ability to execute rapid responses to time-critical needs when they arise. Common Services identifies and presents options for concepts/solutions and experimentation including international efforts, conducts concepts development, solutions assessment, rapid evaluation of alternatives, experimentation planning, modeling and simulation, and develops budgetary recommendations for ORS solutions.

ORS is working with the University of Hawaii's (U of H) Hawaii Space Flight Laboratory (HSFL) and Sandia National Laboratory on the Low Earth Orbit Nanosatellite Integrated Defense Autonomous Systems (LEONIDAS) program. LEONIDAS is to design, fabricate, launch, and perform on-orbit operations of small and micro-satellites for early detection of missile launches by hostile forces.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Analysis, modeling, simulation, and program support	10.815	19.450	13.169	-	13.169
Description: Perform concepts and solutions for warfighter urgent needs. Perform modeling, simulations, and analyses for various alternative concepts, and develop conceptual requirements.					
FY 2010 Accomplishments: Obtained final DoD approval for the Rapid Deployable Space (RDS) Capabilities Based Analysis (CBA). Performed the kick-off study for USSTRATCOM Urgent Need #4--Missile Warning. Completed the ground system architecture for communications. Oversee the RRSW Independent Validation & Verification (IV&V) efforts through the RRSW Jumpstart/JOD evaluation process. Completed the first RF modular payload (Synthetic Aperture Radar (SAR)) design study. Performed the tactical electronic support mission design study. Completed the TacSat-3 Military Utility Analysis (MUA). Postponed the TacSat-4 MUA due to delayed TacSat-4 launch to FY11.					
FY 2011 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A015: *ORS Common Services*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Integrate the findings from the RDS CBA. Perform kick off studies for urgent needs. Develop the ground systems architectures for RF modular mission kit and Missile Warning mission kit. Oversee the RRSW IV&V efforts through the RRSW Jumpstart/JOD evaluation process. Conclude the protected communications mission design study. Support the SAR mission kit development. Perform the TacSat-4 and ORS-1 MUAs. ***FY 2012 Base Plans:*** Integrate the findings from the RDS CBA into ORS Tier activities. Perform further kick-off studies for urgent needs as presented by JFCs. Continue to develop the ground systems architecture for RF modular mission kit; continue to develop ground systems architecture for Missile Warning mission kit. Oversee the RRSW IV&V efforts through the RRSW Jumpstart/JOD evaluation process. Continue to support the SAR mission kit development. Continue ORS-1 MUA. ***FY 2012 OCO Plans:*** Not Applicable					
Accomplishments/Planned Programs Subtotals	10.815	19.450	13.169	-	13.169

	FY 2010	FY 2011
Congressional Add: LEONIDAS ***FY 2010 Accomplishments:*** Work with the Hawaii Space Flight Lab and Sandia National Lab on the Low Earth Orbit Nanosatellite Integrated Defense Autonomous Systems (LEONIDAS) program. Holding System Requirements Review for HawaiiSat-1, CDR for Super Strypi, and begin construction of launch pad structure at the Pacific Missile Range Facility. ***FY 2011 Plans:***	4.750	-
Congressional Add: Micro-Satellite Serial Manufacturing to include Academic Outreach ***FY 2010 Accomplishments:*** The objective of the tasks for the University of Southern California (USC) are to go from design to hardware build for a Cubesat based vehicle, using a design synthesis tool and paperless design approach process. ***FY 2011 Plans:***	1.200	-
Congressional Add: Space Sensor Data Link Technology	4.800	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A015: *ORS Common Services*

	FY 2010	FY 2011
FY 2010 Accomplishments: Develop space sensor data link technology to support the design and development of the Space-qualified CDL and provide a radiation-hardened CDL prototype for ORS use. The requirement also covers potential development of an Operational complete CDL Transmit-only CDL system (including the RF path and Antenna) for ORS-1. ***FY 2011 Plans:***		
Congressional Add: Rapid Small Satellite Development Test Facilities ***FY 2010 Accomplishments:*** The objective of the tasks for the University of New Hampshire (UNH) areto develop and test small payloads. Electromagnetic Interference Test Chambers, Electronic Instrumentation test facilities, and a Partial Discharge Test System (for HV Instrumentation) are being acquired. ***FY 2011 Plans:***	1.600	-
Congressional Adds Subtotals	12.350	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Activity Not Provided: *Title Not Provided*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Competitively award contracts through ORS Office or partner organizations.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A015: *ORS Common Services*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ORS Concept Development	PO	Aerospace:El Segundo, CA	2.300	2.400	Oct 2010	2.500	Oct 2011	-		2.500	Continuing	Continuing	TBD
Engineering, Simulation, Analysis, and Support	MIPR	AFRL/RD:KAFB, NM	6.300	-		-		-		-	0.000	6.300	6.300
LEONIDAS	SS/CPFF	U of Hawaii:Honolulu, HI	9.750	-		-		-		-	0.000	9.750	TBD
Micro-Satellite serial manufacturing	MIPR	AFRL:Kirtland AFB, NM	2.000	-		-		-		-	0.000	2.000	2.000
Rapid small satellite development test facilities	PO	U of New Hampshire:Durham, NH	1.600	-		-		-		-	0.000	1.600	1.600
Space Sensor Data Link Technology	SS/CPAF	L3 Comm:Salt Lake City, UT	4.800	-		-		-		-	0.000	4.800	TBD
		Subtotal	26.750	2.400		2.500		-		2.500			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering and Technical Assistance	C/TBD	GSA:San Antonio, TX	0.500	4.200	Oct 2010	4.200	Oct 2011	-		4.200	Continuing	Continuing	TBD
		Subtotal	0.500	4.200		4.200		-		4.200			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A015: *ORS Common Services*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Perform modeling, simulation, analysis and assess alternative concepts/ requirements & program support	Various	Various:Various,	6.515	12.850	Oct 2010	6.469	Oct 2011	-		6.469	Continuing	Continuing	TBD
		Subtotal	6.515	12.850		6.469		-		6.469			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	33.765	19.450		13.169		-		13.169			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A015: *ORS Common Services*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A015: *ORS Common Services*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Rapidly Deployable Space (RDS) Capability Based Assessment	1	2010	4	2016
JFC-4 Missile Warning Risk Mitigation	2	2010	1	2011
Additional JFC urgent need analyses	1	2011	4	2016
Ground Systems Enterprise Architecture for surveillance/reconnaissance, communications, and space situational awareness	1	2010	4	2016
RRSW IV&V	4	2010	4	2016
RF Modular (SAR) Mission Kit Design Study	1	2010	3	2010
Tactical Electronic Support Mission Design Study	2	2010	4	2010
Protected Comms Mission Design Study	2	2010	1	2011
SAR Mission Kit Development Support	1	2011	4	2016
TacSat-3 military utility assessment	1	2010	4	2010
TacSat-4 military utility assessment	3	2011	1	2012
ORS-1 military utility assessment	2	2011	4	2013
SAR Modular Mission Kit military utility assessment	4	2015	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
64A020: *AF Funded ORSSats*	110.620	74.528	73.374	-	73.374	63.123	39.200	109.867	111.879	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Operationally Responsive Space projects are optimized for prioritized theater use and/or surge, augmentation and replenishment of traditional space capabilities. The ORS Concept of Operations (CONOPS) drives the need for satellites featuring high degrees of modularity, standard interface vehicles, and the use of plug and play payloads and buses. Responsive satellites will be capable of rapid satellite initialization and be networked with other national security space, air and surface systems.

ORS projects provide a broad range of capabilities directly supporting warfighter needs. Potential missions include communications, data exfiltration; blue-force situational awareness; positioning, navigation, and timing; weather; and battlefield intelligence, surveillance, and reconnaissance (ISR). The highest priority for the ORS office is the ORS-1 that is being fielded to respond to CENTCOM's urgent need to rapidly provide ISR for theater warfighters. The second priority of the ORS office is to continue maturing ORS enabling elements including the Radio Frequency (RF) Modular Payload mission kit (this mission kit will enable Synthetic Aperture Radar (SAR), Communications, and Tactical Electronic Support capabilities. The remaining priorities for the ORS office are to satisfy the high priority needs for augmentation and reconstitution, such as Missile Warning, Wideband Protected Communication, Narrowband Communication, Space Situational Awareness, and Hyperspectral Imagery.

The capabilities planned for RF Modular Payload mission kits were selected to systematically mature the ORS enabling elements to fully meet the USSTRATCOM-specified responsiveness timelines and the 2007 NDAA cost targets. This includes the development of a modular open system architecture employing plug and play standards, such as a Rapid Response Space Works, a modular space vehicle (MSV) and integration with the Multi-Mission Satellite Operations Center (MMSOC).

These funds will support on-going analyses, employment and integration of new concepts and methods for enhancing the responsiveness of the existing capabilities and quick reaction opportunities, such as TacSat-4 launch and orbital support, and the Jumpstart rapid development, integration, and launch demonstrations. When ORS-appropriate USSTRATCOM urgent needs arrive during the execution year, programmed ORS projects are reevaluated and may be modified or even delayed to meet the urgent needs, thus making the urgent needs the number one priority.

ORS Mission Kit Enabler Projects include satellite vehicles, launch, integration, operational experimentation, and interim transitions from ORS derived solutions to operational capabilities. Each mission kit also includes enabler investments to improve the responsiveness and lower the cost of the designing, fabricating, launching and operating ORS space capabilities. These mission kits culminate in on-orbit capabilities ready for operational experimentation and, when desired, transition to enduring operations.

ORS is working with the University of Hawaii's (U of H) Hawaii Space Flight Laboratory (HSFL) and Sandia National Laboratory on the Low Earth Orbit Nanosatellite Integrated Defense Autonomous Systems (LEONIDAS) program. LEONIDAS is to design, fabricate, launch, and perform on-orbit operations of small and micro-satellites for early detection of missile launches by hostile forces.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*

ORS is developing Common Data Link hardware for space use.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Cross Cutting	26.343	5.428	12.674	-	12.674
Description: Perform cross-cutting activities that support all three tiers of ORS activities. ***FY 2010 Accomplishments:*** Planned the development of the first enabler mission kit launch demonstration and continued responsive launch and range enablers. Developed the requirements, concepts, and solutions for USSTRATCOM's Urgent Need #4 for missile warning. Collaborated with the National Reconnaissance Office on a signals intelligence payload and other efforts. Completed the Space Common Data Link and continued command & control, data processing, and dissemination enablers. Postponed TacSat-4 launch and on-orbit support operations as TacSat-4 launch was delayed to FY11. ***FY 2011 Plans:*** Provide TacSat-4 launch and on-orbit flight support and performance analysis. Deliver and flight test the small space crypto package. Continue ORS-1 Mission Systems Engineering/Program Management (SEPM) support. Provide assessment and evaluation of Plug 'n Play maturity and technology for follow-on mission kits. Continue SEPM and IV&V for RRSW & MSV. Continue ongoing systems engineering support of future mission development. ***FY 2012 Base Plans:*** Continue ORS-1 Mission Systems Engineering/Program Management (SEPM) support. Provide assessment and evaluation of Plug 'n Play maturity and technology for follow-on mission kits. Continue SEPM and IV&V for RRSW & MSV. Continue ongoing systems engineering support of future mission development. Continue ORS-1 Mission Operations and Lessons Learned studies. Continue to develop Government Reference Designs for eight ORS Mission Kits. Conduct Modeling and Simulations for Mission Evaluations for eight ORS Mission Kits. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. ***FY 2012 OCO Plans:*** Not Applicable					
Title: Tier-1	2.600	2.600	2.600	-	2.600
Description: Perform Tier-1 activities, including operational capabilities, development, and integration					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
FY 2010 Accomplishments: Transitioned the automated toolkit to the Virtual Mission Operations Center (VMOC) as a reference guide of non-National System assets that warfighters use to fill collection shortfalls. Participated in war games and exercises to introduce and apply ORS and ORS-like assets. ***FY 2011 Plans:*** Coordinate operational demonstrations and assess utility of nano and microsatellites with partners. Conduct operational demonstrations with services and combatant commanders using ORS and ORS-like assets. Release the automated Toolkit for use on VMOC to combatant commanders and other users. ***FY 2012 Base Plans:*** Coordinate integration of ORS Tier-1 solutions, experiments and demonstrations into COCOMs and Component exercises and operations in order to establish visibility and socialization of ORS concepts and solutions. Develop CONOPs for COCOM use of assets. ***FY 2012 OCO Plans:*** Not applicable					
Title: Tier-2 ***Description:*** Perform Tier-2 deployment demonstrations to provide field-ready capabilities and enabler maturing projects. ***FY 2010 Accomplishments:*** Initiated Modular Space Vehicle (MSV) (Bus and modular RF Payload) to provide foundation for rapid integration, assembly, and test of components to demonstrate compressed deployment timelines and achieve more rapid integration of mature, enabling technologies. Awarded contract and implemented Rapid Response Space Works (RRSW) establishing the key processes and relationships that will allow rapid AI&T. Initiated Phase 1 for RRSW facility modifications and purchased long-lead items supporting demonstrations and responses to urgent needs. ***FY 2011 Plans:*** Design a definitive MSV Bus and modular RF Payload (PDR-level design) with demonstration of end-to-end RRSW capabilities for technology development and integration. Initiate Phase 2 for RRSW-complete facility modifications, major equipment installation, complete clean room and start RRSW initial operations. Conduct limited operations for participation in wargames and exercises to demonstrate rapid assembly, integration, and	31.900	40.800	7.200	-	7.200

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
test. Complete trials ("Jump Start") for maturing rapid assembly, integration, and test (AI&T) processes to include adaptation for changing payload configurations. ***FY 2012 Base Plans:*** Continue to develop end-to-end RRSW capabilities for technology development and integration in preparation for SAR launch in FY2015. Perform Joint Operational Demonstrations to prepare RRSW team for Rapid AI&T in accordance with 6 day call up demonstration of RRSW end-to-end capability. ***FY 2012 OCO Plans:*** Not applicable.					
Title: Tier-3 ***Description:*** Perform Tier-3 design, fabrication, and integration to satisfy joint force commander needs. Provide strategic science and technology direction and execution. ***FY 2010 Accomplishments:*** Completed assembly, integration, and test of ORS-1 in preparation for early FY2011 launch. Completed Version 1 of enabler roadmaps (launch and range, command and control, processing, and dissemination, bus, and payload). Designed innovation cell for rapid transition of innovations in science and technology. ***FY 2011 Plans:*** Launching ORS-1 to support USCENTCOM urgent need. Launching TacSat-4 for UHF Communications operational demonstration (launch delayed from FY10 target). Conduct enabler demonstration mission for innovation cell (conduit for enabling science and technology capabilities and improvements to architecture). ***FY 2012 Base Plans:*** Continue to design the MSV Bus and modular RF Payload (CDR-level design). Focused effort on Multi-mission bus and payload for SAR satellite. Initiate enabler roadmaps in areas of launch and range, command and control, processing and dissemination, bus, and payload architecture for MSV RF modular mission kit. Continue to develop ORS pillars in pursuit of responsive space capabilities. ***FY 2012 OCO Plans:*** Not applicable	49.777	25.700	50.900	-	50.900
Accomplishments/Planned Programs Subtotals	110.620	74.528	73.374	-	73.374

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A020: *AF Funded ORSSats*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Activity Not Provided: *None*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Expeditiously award contracts through ORS Office or partner organizations.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ORS-1 (JFC need #3)	SS/CPFF	Goodrich:Danbury, CT	184.800	15.700	Oct 2010	1.000	Oct 2011	-		1.000	Continuing	Continuing	212.800
MSV RF modular payload (SAR)	C/CPAF	Sierra Nevada:Sparks, NV	3.250	10.100	Nov 2010	22.600	Oct 2011	-		22.600	Continuing	Continuing	TBD
MSV RF modular bus	C/CPAF	Northrop Grumman:Redondo Beach, CA	3.250	16.500	Nov 2010	15.300	Oct 2010	-		15.300	Continuing	Continuing	TBD
MSV RF modular architecture	MIPR	NASA Ames:Sunnyvale, CA	0.500	-	Jan 1901	10.900	Oct 2011	-		10.900	Continuing	Continuing	TBD
Sys Eng, Launch & range, C², TPED enablers	Various	Various:Various,	16.420	5.528	Oct 2010	10.074	Oct 2011	-		10.074	Continuing	Continuing	TBD
JFC needs (#1, #2, & #4)	MIPR	AFRL Sandia:Kirtland AFB NM, NM	1.600	1.000	Oct 2010	1.000	Oct 2011	-		1.000	Continuing	Continuing	TBD
Rapid Response Space Works	C/CPFF	Millenium Eng.:Arlington, VA	5.800	7.100	Oct 2010	7.300	Oct 2011	-		7.300	Continuing	Continuing	TBD
Tier 1 operational capabilities, development, and integration	Various	Various:Various,	7.200	2.600	Oct 2010	2.600	Oct 2011	-		2.600	Continuing	Continuing	TBD
		Subtotal	222.820	58.528		70.774		-		70.774			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ORS Sat / TacSat launch vehicles, range operations, and related launch support	C/TBD	Orbital:Chandler, AZ	34.100	16.000	Oct 2010	2.600	Oct 2011	-		2.600	Continuing	Continuing	TBD

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604857F: *Operationally Responsive Space*	PROJECT 64A020: *AF Funded ORSSats*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			34.100	16.000		2.600		-		2.600			

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	256.920	74.528		73.374		-		73.374			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A020: *AF Funded ORSSats*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: *Research, Development, Test & Evaluation, Air Force* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604857F: *Operationally Responsive Space*	**PROJECT** 64A020: *AF Funded ORSSats*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TacSat-3 launch and ops	1	2010	3	2011
TacSat-4 launch and ops	4	2011	4	2012
Cross-Cutting Activities: Systems Engineering & Architecture	1	2010	4	2016
Tier-1 Operational Capabilities Development and Integration	1	2010	4	2016
ORS-1 (CENTCOM Urgent Need)	1	2010	4	2013
RF Modular Mission Kit (SAR)	4	2010	4	2016
Ground Systems Enterprise	1	2010	4	2016
Launch and Range Enabler Maturity	1	2010	4	2015
Rapid Response Space Works	1	2010	4	2016
Jumpstart / Joint Operational Demonstrations	1	2010	4	2014