Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	124.983	110.379	-	-	-	-	-	-	-	Continuing	Continuing
64A015: *ORS Common Services*	18.963	13.169	-	-	-	-	-	-	-	Continuing	Continuing
64A020: *AF Funded ORSSats*	106.020	97.210	-	-	-	-	-	-	-	Continuing	Continuing

Note

Beginning in FY 2013, 0604857F, ORS, efforts are being descoped, and the remaining efforts transferred to other space programs in order to better integrate the ORS concept into the entire space architecture.

There is no funding required for this program beyond the FYDP.

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.

Since the ORS standup in 2007, the terms resiliency and responsiveness in association with space programs are now seen in almost every policy and guidance document, not just at the DoD level, but at a National level as well. Resilience has become a key criterion in evaluating alternative architectures, including cost-effective space system protection, hosting payloads on a mix of platforms in various orbits, drawing on distributed international and commercial partner capabilities, and developing and maturing responsive space capabilities. We are transitioning the activities of the ORS program, and synergistically applying its efforts to other space technology efforts.

This refocused effort will integrate the operationally responsive space efforts, principles and activities into the Air Force Space and Missile Systems Center (SMC). SMC will then be better able to develop various enablers to ensure resilience, survivability and flexibility and to explore space mission augmentation options. SMC will also be better positioned to incorporate responsive and resilient R&D efforts into other platforms.

The Department of Defense will support the new approach by developing architectures for space mission areas that will include international cooperation and commercial solutions and will also look at how space missions are sustained and augmented to support the warfighter in all contingencies. This strategy will also integrate the lessons learned from the ORS program office’s accomplishments into existing space programs of record. The end result of the program’s termination will be that operationally responsive space activities are fully integrated into SMC’s ongoing architectures and Space Modernization Initiative, increasing resilience and flexibility in space systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force	DATE: February 2012
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*

This program is in Budget Activity 04, Advanced Component Development and Prototypes, because the efforts are necessary to evaluate integrated technologies, representative modes, and prototype systems in a high fidelity and realistic environment.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	93.978	86.543	76.386	-	76.386
Current President's Budget	124.983	110.379	-	-	-
Total Adjustments	31.005	23.836	-76.386	-	-76.386
• Congressional General Reductions	-	-1.164			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	31.005	-	-76.386	-	-76.386

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2011	FY 2012
Project: 64A020: *AF Funded ORSSats*		
Congressional Add: *Responsive Launch Capability*	31.492	25.000
Congressional Add Subtotals for Project: 64A020	31.492	25.000
Congressional Add Totals for all Projects	31.492	25.000

Change Summary Explanation

FY2011: (+32.000) Congressional add for Responsive Launch Capability; (-0.995) for Congressional General Reductions.
FY2012: (+25.000) Congressional add for Responsive Launch Capability; (-1.164) for Congressional General Reduction.
FY2013: (-76.386M) due to transitioning ORS efforts to other space programs and reallocation of funding to higher Department priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
64A015: *ORS Common Services*	18.963	13.169	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Beginning in FY 2013, 0604857F, ORS, efforts are being descoped, and the remaining efforts transferred to other space programs in order to better integrate the ORS concept into the entire space architecture.

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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Analysis, modeling, simulation, and program support	18.963	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 2011 Accomplishments: Integrated the findings from the Rapid Deployable Space (RDS) Initial Capabilities Document (ICD). Performed kick off study for the Missile Warning urgent need. Developed the ground systems architectures for the Radio Frequency (RF) modular mission kit and Missile Warning mission kit. Oversaw the Rapid Response Space Works (RRSW) Independent Validation & Verification (IV&V) efforts through the RRSW Jumpstart/Joint Operational Demonstration (JOD) evaluation process. Concluded the protected communications mission design study. Supported the Synthetic Aperture Radar (SAR) mission kit development. Began the TacSat-4 and ORS-1 Military Utility Assements (MUAs).			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012
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 2011	FY 2012	FY 2013
Perform further kick-off studies for urgent needs as presented by JFCs. Continue to fund operations and transition support and joint military utility analyses for ORS-1 and TacSat-4. Support the transition of the ORS Office and transfer of data to the Space and Missile Systems Center.			
Accomplishments/Planned Programs Subtotals	18.963	13.169	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• N/A: *N/A*	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-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
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 2013 Air Force		DATE: February 2012
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	2011	4	2012
JFC-4 Missile Warning Risk Mitigation	1	2011	1	2011
Additional JFC urgent need analyses	1	2011	4	2012
Ground Systems Enterprise Architecture for surveillance/reconnaissance, communications, and space situational awareness	1	2011	4	2012
RRSW IV&V	1	2011	4	2012
Protected Comms Mission Design Study	1	2011	1	2011
SAR Mission Kit Development Support	1	2011	1	2012
TacSat-3 military utility assessment	1	2011	1	2011
TacSat-4 military utility assessment	4	2011	2	2012
ORS-1 military utility assessment	3	2011	4	2011
International collaboration efforts	1	2011	4	2012

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
64A020: *AF Funded ORSSats*	106.020	97.210	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Beginning in FY 2013, 0604857F, ORS, efforts are being descoped, and the remaining efforts transferred to other space programs in order to better integrate the ORS concept into the entire space architecture.

A. Mission Description and Budget Item Justification

Operationally Responsive Space projects were 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.

The Air Force will continue to maintain ORS-1, launched 29 Jun 2011 to respond to USCENTCOM's urgent need, validated by USSTRATCOM, to provide ISR for theater warfighters. The additional ORS Office efforts of maturing enabling elements will be descoped and the knowledge base will be transitioned as appropriate to other space programs including Global Positioning System, Advanced EHF Milsatcom, Space Based Infrared System, Space Control Technology, and the rest of the space architecture.

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 2011	FY 2012	FY 2013
Title: Cross Cutting	5.428	11.510	-
Description: Perform cross-cutting activities that support all three tiers of ORS activities.			
FY 2011 Accomplishments: Provided TacSat-4 launch and on-orbit flight support and performance analysis. Continued developing the small space crypto package. Continued ORS-1 Mission Systems Engineering/Program Management (SEPM) support. Provided assessment and evaluation of Plug 'n Play maturity and technology for follow-on mission kits. Continued SEPM and Independent Verification & Validation (IV&V) for RRSW & the Modular Space Vehicle (MSV). Continued ongoing systems engineering support of future mission development.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012
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 2011	FY 2012	FY 2013
Continue operations, transition support, and joint military utility analyses for ORS-1 and TacSat-4. Continue SEPM and IV&V for RRSW & the Modular Space Vehicle (MSV). Continue ongoing systems engineering support of future mission development. Continue ORS-1 Mission Operations and Lessons Learned studies. Conduct Modeling and Simulations for Mission Evaluations for ORS Mission Kits. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Transfer lessons learned, designs, data, and processes to the Space and Missile Systems Center.			
Title: Tier-1 ***Description:*** Perform Tier-1 activities--establishing the use of exisitng space systems, operations, and processes to provide responsive effects in minutes to days from when need is established. ***FY 2011 Accomplishments:*** Coordinated operational demonstrations and assessed utility of nano and microsatellites with partners. Conducted operational demonstrations with services and combatant commanders using ORS and ORS-like assets. Released the automated Toolkit for use on Virtual Mission Operations Center (VMOC) to combatant commanders and other users. ***FY 2012 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. Transfer the automated Toolkit to the Joint Space Operations Center Mission System.	2.600	2.600	-
Title: Tier-2 ***Description:*** Perform Tier-2 deployment demonstrations to provide field-ready capabilities and enabler maturation projects. ***FY 2011 Accomplishments:*** Designed a definitive MSV Bus and modular RF Payload (PDR-level design) with demonstration of end-to-end RRSW capabilities for technology development and integration. Initiated Phase 2 for RRSW-complete facility modifications, major equipment installation, completed clean room and started RRSW initial operations. Conducted limited operations for participation in wargames and exercises to demonstrate rapid assembly, integration, and test. Completed trials ("Jump Start") for maturing rapid assembly, integration, and test (AI&T) processes to include adaptation for changing payload configurations. ***FY 2012 Plans:*** Continue to support RRSW capabilities at the minimum required to support the ORS Enabler Mission and ultra-low cost, rail launched payload integration for FY13 launches; MSV bus delivery; and maintain facility safety. Transfer residual RRSW to AF Research Lab.	40.800	7.200	-
Title: Tier-3	25.700	50.900	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Perform Tier-3 design, fabrication, and integration to satisfy joint force commander needs. Provide strategic science and technology direction and execution and low cost launch vehicle development. ***FY 2011 Accomplishments:*** Launched ORS-1 to support USCENTCOM urgent need. Launched TacSat-4 for UHF Communications operational demonstration (launch delayed from FY10 target). Conducted enabler demonstration mission for innovation cell (conduit for enabling science and technology capabilities and improvements to architecture). ***FY 2012 Plans:*** Develop the MSV modular RF Payload to a CDR-level design and complete and deliver the MSV multi-mission Bus and its associated hardware (space common data link radio) along with the Gryphon cryptology unit (software based encryption for satellite commnad and control) in FY13. Complete the Super Strypi launcher (employing an Autonomous Flight Safety System) and launch a 300Kg microsatellite class space vehicle in 4QFY13. Transfer capability to Space and Missile Systems Center.			
Accomplishments/Planned Programs Subtotals	74.528	72.210	-

	FY 2011	FY 2012
Congressional Add: Responsive Launch Capability	31.492	25.000
FY 2011 Accomplishments: Continued developing a responsive launch capability focused on six key components: storable launch vehicles, including ultra low cost versions; rapid orbital trajectory automation; autonomous flight safety; on-board metric tracking; space based range; and automated range safety analyses.		
FY 2012 Plans: Continue the ORS Enabler Mission and selected launch vehicle improvements leading to a launch in 4QFY13. Continue developing an ultra-low cost, rail launched new small launch capability. Continue development and qualification testing of autonomous flight safety assemblies, on-board metric tracking, and space based range.		
Congressional Adds Subtotals	31.492	25.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• R-30: *RDT&E AF, PE 0603430F, Advanced EHF Milsatcom*	0.000	0.000	1.500	0.000	1.500	1.500	1.500	1.500	1.500	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• R-32: *RDT&E AF, PE 0603438F, Space Control Technology*	0.000	0.000	2.000	0.000	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing
• R-55: *RDT&E AF, PE 0604858F, Technology Transition*	0.000	0.000	3.000	0.000	3.000	3.000	3.000	3.000	3.000	Continuing	Continuing
• R-69: *RDT&E AF, PE 0604441F, SBIRS High EMD*	0.000	0.000	2.000	0.000	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing
• R-112: *RDT&E AF, PE 0603423F, GPS III Operational Control Segment*	0.000	0.000	1.500	0.000	1.500	1.500	1.500	1.500	1.500	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-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
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 2013 Air Force		DATE: February 2012
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	2011	3	2012
TacSat-4 launch and ops	4	2011	2	2013
Cross-Cutting Activities: Systems Engineering & Architecture	1	2011	4	2012
Tier-1 Operational Capabilities Development and Integration	1	2011	4	2012
ORS-1 (CENTCOM Urgent Need)	1	2011	4	2013
MSV RF Modular Bus & Payload	1	2011	2	2013
C2 & TPED Enablers	1	2011	2	2012
Launch and Range Enabler Maturity	1	2011	4	2013
Rapid Response Space Works	1	2011	4	2012
Jumpstart / Joint Operational Demonstrations	1	2011	4	2011