Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force											Date: March 2014	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604857F / *Operationally Responsive Space*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	-	96.209	10.000	-	-	-	-	-	-	-	Continuing	Continuing
64A020: *AF Funded ORSSats*	-	96.209	10.000	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

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 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 U.S. Central Command's (USCENTCOM's) urgent need, validated by USSTRATCOM, to provide intelligence, surveillance, and reconnaissance (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 projects provide a broad range of capabilities directly supporting warfighter needs. Potential missions include communications, data exfiltration; blue/friendly-force situational awareness; maritime domain awareness; positioning, navigation, and timing; weather; and battlefield ISR. The highest priorities of the ORS Office are the completion of the Modular Space Vehicle (MSV) Bus development, launch of the ORS-3 Enabler and ORS-4 Super Strypi missions, development of the $60M next generation ORS mission, and the low cost manufacturing initiative. 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 Electro-Optical/Infrared (EO/IR) imagery.

The capabilities planned for 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).

ORS is working with the University of Hawaii's (U of H) Hawaii Space Flight Laboratory and Sandia National Laboratory on the Super Strypi small launch vehicle to orbit the U of H's HiakaSat environmental monitoring satellite.

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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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	96.209	10.000	-	-	-
Total Adjustments	96.209	10.000	-	-	-
• Congressional General Reductions	-0.139	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	105.000	10.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-8.652	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2013	FY 2014
Project: 64A020: *AF Funded ORSSats*		
Congressional Add: *ORS: Tier-1*	1.901	-
Congressional Add: *ORS: Tier-2*	2.200	-
Congressional Add: *ORS: Tier-3*	72.899	10.000
Congressional Add: *ORS: Cross Cutting*	19.209	-
Congressional Add Subtotals for Project: 64A020	96.209	10.000
Congressional Add Totals for all Projects	96.209	10.000

Change Summary Explanation

FY2013: +$105M Congressional add to continue ORS program; -$8.652M for sequestration; -$0.139M for CGR

FY2014: +$10M Congressional add for authorization adjustment

C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014
Congressional Add: ORS: Tier-1	1.901	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force		Date: March 2014
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014
FY 2013 Accomplishments: Coordinated 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. Developed CONOPs for COCOM use of assets. Supported COCOM wargames. Transfered the automated Toolkit to the Joint Space Operations Center Mission System. Conducted Geographic Combatant Command (GCC) and space community engagements. Documented ORS Transition standards. Developed Operational Capabilities Transitions framework for ORS missions. Supported the development of the Responsive Space International Memorandum of Understanding (MOU). Completed Skybox Joint Military Utility Assessment (JMUA). Developed and executed Surveillance, Exploitation and Assessment for Maritime Interdiction of Surface Targets (SEA MIST) demonstrations.		
Congressional Add: ORS: Tier-2 ***FY 2013 Accomplishments:*** Completed successful Operational Readiness Proof Testing of the Rapid Response Space Works (RRSW) concept of rapid/efficient/adaptable response to urgent needs utilizing mass mockup bus and payload hardware with innovative technology. Initiated a fully functional High Bay clean room satellite assembly, integration and test facility at Kirtland AFB; ready for operation utilizing the efficiency concepts, tooling, and processes developed for rapid urgent response and cost effective buildup. Co-sponsored innovative space cost reduction studies in the areas of Open Manufacturing, Autonomous Flight Safety Systems, Low-Cost Communications for SmallSat networks, Common NanoSat Avionics Technologies, and COTS-based Tactical Force Tracking system for Command and Control. Created an automated conversion application that builds the command and telemetry database from component electronic data sheets for incorporation into mission unique flight software. Characterized ORS-2 Bus capability and limitations for expanded payload options.	2.200	-
Congressional Add: ORS: Tier-3 ***FY 2013 Accomplishments:*** Completed the required analysis with USSTRATCOM to identify potential future missions. Initiated the ORS-5 mission demonstrating a space situational awareness payload to meet a USSTRATCOM validated urgent need, address rapidly evolving threats, and serve as a pathfinder in this vital mission area. Completed and delivered 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 command and control) to the ORS Rapid AI&T facility. Launched the ORS-3 Enabler Mission demonstrating automated trajectory development, rapid range safety plottin, and an on-board Autonomous Flight Safety System (AFSS). ORS-3 also launched the Air Force's Space Test Program Satellite-3 and 28 cubesats, including first demonstration of Gryphon cryptology unit. Continued the ORS-4 Super Strypi launcher (also employing an AFSS) to launch a 300Kg microsatellite class space vehicle; includes the development of a new rail launcher,	72.899	10.000

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014
and installation of a new launch pad at the Pacific Missile Range Facility (PMRF), the University of Hawaii's HiakaSat primary payload and an additional 11 CubeSats flying as secondary payloads. ***FY 2014 Plans:*** Continued the ORS-5 mission to develop the USSTRATCOM validated, ORS Executive Committee approved payload for space situational awareness. Continued the ORS-4 Super Strypi launcher (employing an Autonomous Flight Safety System) to launch a 300Kg microsatellite class space vehicle; includes the development of a new rail launcher, and installation of a new launch pad at the Pacific Missile Range Facility (PMRF), the University of Hawaii's HiakaSat primary payload and an additional 11 CubeSats flying as secondary payloads.		
Congressional Add: ORS: Cross Cutting ***FY 2013 Accomplishments:*** Continued Systems Engineering/Program Management (SEPM) Independent Verification & Validation (IV&V) for ORS rapid Assembly, Integration and Test (AI&T) capability and the MSV. Continued ongoing systems engineering support of future mission development. Continued ORS-1 Mission Operations and Lessons Learned studies. Conducted Modeling and Simulations for Mission Evaluations for ORS Mission Kits. Refined ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Led, participated in, and supported, as appropriate, the solidification of space doctrine.	19.209	-
Congressional Adds Subtotals	96.209	10.000

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• RDTE: BA04: 0603430F: *Advanced EHF MILSATCOM (SPACE)*	1.500	-	-	-	-	-	-	-	-	-	1.500
• RDTE: BA04: 0603438F: *Space Control Technology*	-	2.000	-	-	-	-	-	-	-	Continuing	Continuing
• RDTE: BA04: 0604858F: *Tech Transition Program*	-	3.000	3.000	-	3.000	3.000	3.000	3.000	3.000	Continuing	Continuing
• RDTE: BA05: 0604441F: *Space Based Infrared System (SIBRS) High EMD*	2.000	2.000	2.000	-	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing

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D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• RDTE: BA07: 0603423F: *Global Positioning System III - Operational Control Segment*	1.500	1.500	1.500	-	1.500	1.500	1.500	1.500	1.500	Continuing	Continuing

Remarks

E. Acquisition Strategy

Expeditiously award contracts through ORS Office or partner organizations.

F. 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 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604857F / *Operationally Responsive Space*	**Project (Number/Name)** 64A020 / *AF Funded ORSSats*