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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603830F / <i>Space Security and Defense Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	30.592	30.771	32.399	0.000	32.399	31.481	30.952	31.527	32.085	Continuing	Continuing
64A025: <i>Space Protection Program</i>	-	30.592	30.771	32.399	0.000	32.399	31.481	30.952	31.527	32.085	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This Program Element funds the DoD/Air Force component of the Space Security and Defense Program (SSDP). The SSDP is a Joint Department of Defense (DoD) and Office of the Director of National Intelligence (ODNI) organization established to function as the center of excellence for options and strategies (materiel, non-materiel, cross-Title, cross-domain) leading to a more resilient and enduring National Security Space (NSS) Enterprise. The SSDP Operates under the authority of the Deputy Secretary of Defense (DEPSECDEF) and Principal Deputy Director of National Intelligence (PDDNI) to lead and collaborate on space protection vulnerability, susceptibility, and mitigation assessments of NSS services for the purpose of identifying and introducing protection recommendations into existing requirements, budgeting, acquisition, and operational development processes. This unique mission provides an ongoing and crucial core protection competency that advances specific projects/activities (including cyber) to deliver comprehensive, economical and actionable solutions for both programmatic and operational domains.

The SSDP scope spans multiple space missions and stakeholders including the DoD, Intelligence Community (IC), civil, commercial, and international space entities that support NSS missions in both peacetime and throughout all phases of conflict. It is focused on being responsive to NSS stakeholders in providing technical and operational assessments of emergent threat concepts, and developing near- and far-term plans to address strategies, threats, and vulnerabilities. Specific SSDP Projects are structured/ designed to have an impact across all time horizons; near-term focused efforts to complicate adversary operations, mid-term focused efforts to improve system and enterprise survivability, and long-term focused efforts to render adversary capabilities ineffective.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	31.613	30.771	32.722	0.000	32.722
Current President's Budget	30.592	30.771	32.399	0.000	32.399
Total Adjustments	-1.021	0.000	-0.323	0.000	-0.323
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.021	0.000			
• Other Adjustments	0.000	0.000	-0.323	0.000	-0.323

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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**Title:** Threat Mitigation Project and Activities 24.738      25.957      0.000

**Description:** Entails the prioritized, project-specific technical efforts and activities supporting SSDP mission objectives. Includes associated program support/infrastructure and operating costs to sustain a coherent program effort and adhere to the legal requirements of executing a program-specific baseline.

**FY 2015 Accomplishments:**

FY15 projects/activities increased emphasis on addressing a wider domain of capabilities and enhanced the focus on offensive and active defense issues. Increased project capacity in FY15 applied existing processes/methodology to address additional priority space protection issues for Advanced Space Combat Tactics, Counter Network Exploitation Analysis, Wideband Global SATCOM (WGS) Defense Exploration, and Geosynchronous Earth Orbit (GEO) Catalog Expansion.

**FY 2016 Plans:**

FY16 projects/activities will be prioritized to be consistent with the annual work plan that represents the NSS community's interests, priorities, and equities as well as the priorities articulated by the DEPSECDEF and PDDNI. The program will continue to address high-priority space protection issues and apply existing processes/methodology to address protection priorities within specific mission areas including Operations, Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Cyber/Non-Kinetic, Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence - Surveillance - Reconnaissance (ISR). The entire compliment of planned FY16 projects will be flexible and responsive to the evolving protection needs and priorities throughout the NSS Enterprise; focused on meeting the demands for operational planning, ongoing coordination of Title 10/50 activities, and the advancement of specific efforts to actionable solutions that have operational

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
and/or programmatic impact. Experimentation and CONOPS development feeding JICSpOC activities, Advanced Space Combat Tactics, Counter Network Exploitation Analysis, WGS Defense Exploration will be program priorities in FY16.				
<b>FY 2017 Plans:</b> For FY17 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.				
<b>Title:</b> Strategic Protection Activities and Products		3.959	3.939	0.000
<b>Description:</b> Encompasses the program's strategic efforts to develop and support protection-related policy, influence and advocate for protection requirements, analyze impacts of various policy recommendations on mitigation options, and inform/assist policy-makers on opportunities to leverage policy actions to enhance the space protection posture across the NSS Enterprise.				
<b>FY 2015 Accomplishments:</b> FY15 efforts directly supported the main body of the OSD-CAPE led Space Strategic Portfolio Review (SPR). Informed and assisted policy-makers at every level on opportunities to shape policy to enhance space protection posture. Provided policymakers specialized technical assistance, protection-specific data/findings, and validated recommendations regarding the impacts that policy/strategy changes may have on our protection of NSS capabilities.				
<b>FY 2016 Plans:</b> Support all follow-on assessment required out of the Space Strategic Portfolio Review results. Further impact policy across a broader range of DoD, IC and Civil space operations. Continue strategic protection and policy integration efforts across all facets of the NSS Enterprise. Provide technical assistance, advice and strategic solution support to all enterprise stakeholders. Further investigation of specific tactics, technics and procedures (TTP) as well as specific cyber and materiel solutions to emergent capability needs.				
<b>FY 2017 Plans:</b> For FY17 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.				
<b>Title:</b> SATCOM Resiliency Enhancement		1.895	0.875	0.000
<b>Description:</b> Incremental effort to enhance the ground-based software and associated operating/processing procedures used to plan WGS operations. Will leverage current system capabilities and planned software updates to improve code that will make a manually-intensive build cycle more automated/responsive.				

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b> Initial software code updated and enhancement (to include revised operational techniques) continued to be evolved toward the target implementation of FY17. Functional Qualification Test (FQT) testing, initial implementation tasks, amending the proposed code, and ongoing efforts to seamlessly integrate the enhancement into the ground-based WGS planning process all executed in FY15. Technique development and operational integration through the wideband architecture was explored by enabling infrastructure such as spectrum monitoring for electromagnetic interference.</p> <p><b><i>FY 2016 Plans:</i></b> FY16 activities will continue implementation of the enhancement as well as the development and validation of revised techniques to fully operationalize the enhancement by FY17. In order to ensure operational effectiveness, the enhancement will be tested and injected into a variety of relevant exercises. The program will work to tie-in the functions of the new software more-directly with key decision-makers and consider implementation of added features to further enhance the accuracy and effectiveness of the system; accounting for variables not originally identified/known in the original development efforts.</p> <p><b><i>FY 2017 Plans:</i></b> For FY17 these activities have moved to the “Space Protection &amp; Survivability” line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.</p>				
<p><b><i>Title:</i></b> Space Protection and Survivability</p> <p><b><i>Description:</i></b> SSDP organizes, plans, and executes specific projects in three focus areas: Enterprise Capabilities &amp; Solutions; Mission Area Protection Concepts &amp; Architectures; and Operational Tactics, Experiments &amp; Prototypes. Enterprise Capabilities &amp; Solutions projects focus on identifying and advocating for NSS enterprise-level protection requirements and architecture updates/modifications, informing/assisting policy-makers and analyzing policy to enhance the space protection posture across the NSS Enterprise. Mission Area Protection Concepts &amp; Architectures projects constitute protect and defend (P&amp;D) efforts focused on specific mission areas and/or systems. These projects entail the specific technical efforts, activities and engagements supporting capability and architecture development in mission areas such as Space Control, Battle Management Command and Control (BMC2), Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Space Situational Awareness (SSA), Indications and Warning (I&amp;W), and Intelligence – Surveillance - Reconnaissance (ISR). Finally, Operational Tactics, Experiments &amp; Prototypes projects leverage operators, experimentation and prototyping to develop, refine, document and demonstrate Tactics, Techniques and Procedures (TTPs), Concepts of Operation (CONOPS), improved operational capabilities, and associated BMC2 functions. Projects may leave behind a residual operational capability. Additionally, these projects will support development of TTPs and CONOPS for protection solutions developed by SSDP partners across the NSS Enterprise. Projects in all three areas will include cyber and non-kinetic solutions for protecting specific capabilities and the NSS Enterprise.</p>		0.000	0.000	32.399

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b> The other SSDP Major Thrusts transition into this Major Thrust in the FY17 PB documentation.</p> <p><b><i>FY 2016 Plans:</i></b> The other SSDP Major Thrusts transition into this Major Thrust in the FY17 PB documentation.</p> <p><b><i>FY 2017 Plans:</i></b> FY17 projects will focus on high-priority DoD &amp; IC space protect and defend (P&amp;D) considerations such as the Space Strategic Portfolio Review (SPR) and AFSPC Space Enterprise Vision (SEV) while being flexible and responsive to the evolving protection needs and priorities throughout the NSS Enterprise. Individual projects, both in house and in coordination with our mission partners, will work to validate candidate solutions through various means, such as technical analysis, Modeling &amp; Simulation (M&amp;S), and operator engagement. They will: Pursue new P&amp;D solutions, develop CONOPS for both programmed and proposed systems, use M&amp;S resources to mature and shape CONOPS, document architectures and inform programmatic decisions, and utilize experiment results along with M&amp;S recommendations to influence NSS Enterprise requirement and architecture choices. Projects will include prototyping and experimenting with BMC2, SSA and Space Control concepts, planned capabilities and TTPs. Projects will be executed in SSDP labs, mission partner facilities, and often in coordination with the JSpOC, JICSpOC, and NROC. They will incorporate objectives to demonstrate DoD/IC space protection coordination as well as explore data fusion including the integration of commercial tools &amp; services. SSDP will: Continue independent review and assessment for programmatic planning and architectures covering DoD, IC and Civil space operations; engage on strategic protection and policy integration efforts across all facets of the NSS Enterprise; and work with the NSS community to incorporate P&amp;D requirements into policy and guidance to drive future program development and execution. M&amp;S resources will be used to conduct architecture trades at both the enterprise and system level to identify the right mix of systems to meet NSS requirements and examine how those systems should be integrated.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	30.592	30.771	32.399

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

**Remarks**  
Note: The AF/DoD portion of the SSDP is funded entirely from this Program Element. Funding to support the complimentary/partnership National Reconnaissance Office (NRO) activities (as part of the joint/integrated program effort between AFSPC and the NRO) are programmed in the NRO classified funding request.

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**E. Acquisition Strategy**  
All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. The program consists of numerous small projects.

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603830F / Space Security and Defense Program	<b>Project (Number/Name)</b> 64A025 / Space Protection Program
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Threat Mitigation Projects and Activities	Various	Various : Various	-	22.370	Nov 2014	23.401	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
Strategic Protection Activities and Products	Various	Various : Various	-	3.587	Nov 2014	3.600	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
SATCOM Resiliency Enhancement	Various	Various : Various	-	1.800	Nov 2015	0.875	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
Space Protection and Survivability	Various	Various : Various	-	0.000		0.000		29.321	Nov 2016	0.000		29.321	Continuing	Continuing	TBD
<b>Subtotal</b>			-	27.757		27.876		29.321		0.000		29.321	-	-	-

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Management Services (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support and Infrastructure (Gov't PMA)	Various	Various : Various	-	0.985	Nov 2014	0.999	Nov 2015	1.062	Nov 2016	0.000		1.062	Continuing	Continuing	-
Oversight, Advisory and other Technical Support (Contractor PMA)	Various	Various : Various	-	1.850	Nov 2014	1.896	Nov 2015	2.016	Nov 2016	0.000		2.016	Continuing	Continuing	TBD



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603830F / <i>Space Security and Defense Program</i>	<b>Project (Number/Name)</b> 64A025 / <i>Space Protection Program</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Capabilities and Solutions	[Redacted]																											
Mission Area Protection Concepts and Architectures	[Redacted]																											
Operational Tactics, Experiments and Prototypes	[Redacted]																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Enterprise Capabilities and Solutions	1	2015	4	2021
Mission Area Protection Concepts and Architectures	1	2015	4	2021
Operational Tactics, Experiments and Prototypes	1	2015	4	2021