Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1201921F / *Service Support to STRATCOM - Space Activities*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	-	9.388	8.674	14.255	0.000	14.255	14.268	15.115	15.285	15.511	Continuing	Continuing
670373: *DCIP*	-	0.497	0.491	0.492	0.000	0.492	0.491	0.492	0.500	0.510	Continuing	Continuing
672486: *JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES*	-	3.825	2.693	7.453	0.000	7.453	7.483	7.524	7.570	7.639	Continuing	Continuing
67A011: *Space Analysis and Application Development*	-	5.066	5.490	6.310	0.000	6.310	6.294	7.099	7.215	7.362	Continuing	Continuing

A. Mission Description and Budget Item Justification

Funding in this exhibit was previously budgeted in PE 01051921F, Service Support to STRATCOM - Space Activities."

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DoD) risk management program that seeks to ensure the availability of networked assets critical to DoD missions. An October 2014 memorandum of agreement between USSTRATCOM and Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance transferred budget authority for SPACE SECTOR DCIP to USSTRATCOM to streamline the execution of funding. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP manages the identification, prioritization, assessment, and assurance of Defense Critical Infrastructure as a comprehensive program. The program includes the development of adaptive plans and procedures to mitigate risk.

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of Navwar knowledge, and provides subject matter expertise support to warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with the Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC-conducted POFAs are a key element in evaluating US and Coalition Navwar capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT Annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support – Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force	Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*

2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority – Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory

The Space Analysis and Application Development program integrates space based effects into Department's 'Model of Record' for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) campaign level M&S tool. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions. The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. These data isolation challenges result from network isolation, incomplete communications architectures, data security, incompatible information formats, security release policy, etc., inhibiting effective and efficient consolidation of decision quality strategic, operational and tactical information. The DIFC develops machine to machine solutions capable of ingesting Title 10 data at multiple classification levels, to include Special Access Program data, and associating/correlating with National Technical Means at multiple classification levels to both enhance and amplify the Common Operational Picture. The DIFC works closely with DoD SAPCO and elements of the Director of National Intelligence, to include NSA, NRO and CIA, to both identify and address policy barriers, architectures and training opportunities necessary to enable seamless flow of data from all available sensors to warfighters during time of conflict, primarily leveraging currently fielded tactical data links. Though some recommended solutions validated during demonstration events may not transition to operations immediately, but nevertheless provide validated architecture solutions and approved security policies for use should conflict arise versus ad hoc attempts to solve data movement issues during conflict.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	8.090	8.674	9.414	0.000	9.414
Current President's Budget	9.388	8.674	14.255	0.000	14.255
Total Adjustments	1.298	0.000	4.841	0.000	4.841
• 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	0.000	0.000			
• Other Adjustments	1.298	0.000	4.841	0.000	4.841

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / *Service Support to STRATCOM - Space Activities*	Project (Number/Name) 670373 / *DCIP*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
670373: *DCIP*	-	0.497	0.491	0.492	0.000	0.492	0.491	0.492	0.500	0.510	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

An October 2014 memorandum of agreement between USSTRATCOM and Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance transferred budget authority for DCIP funding to USSTRATCOM. FY16 cost = $497K, FY17 cost = $491K. THIS IS NOT A NEW START.

A. Mission Description and Budget Item Justification

The USSTRATCOM Space Sector Defense Critical Infrastructure Protection program (DCIP) is a risk management program that seeks to ensure the availability of networked assets critical to USSTRATCOM and other DoD missions. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP is directed by the Office of the Assistant Secretary of Defense (Homeland Defense & Americas' Security Affairs) [OASD (HD&ASA)]. Space Sector DCIP manages the identification, prioritization, assessment, and assurance of Critical Infrastructure as a comprehensive program that includes the development of adaptive plans and procedures to mitigate risk, restore capability in the event of loss or degradation, support incident management, and protect defense critical infrastructure.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Assett Dependancy / Risk Characterization, Mitigation, and Prototyping	0.497	0.491	0.492	0.000	0.492
Description: Supports 1) systems engineering analysis for the decomposition of mission systems and assets, and supporting networks and infrastructure that execute USSTRATCOM mission, 2) research, studies, and operational assessment of mission system capabilities, methodologies, and tactics to identify critical assets and dependency relationships, and 3) evaluation of mission risk through research, studies, analysis and assessment of threats and hazards paired with exploitable vulnerabilities. Supports analysis for the identification and development of risk mitigation and remediation options through research, studies, analysis and assessment of current and future tactics, techniques and procedures and materiel solutions, enabling USSTRATCOM mission assurance planning, coordination, integration, synchronization supporting the reduction of risk to CDRUSSTRATCOM acceptable levels. Supports three spiral development cycles annually consisting of concept and requirement development, tool engineering, algorithm development, prototyping, and testing to support rapid mission impact assessment, risk assessment, and risk management.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 670373 / *DCIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: - Analyzed of USSTRATCOM Space Sector critical infrastructure assets and dependencies for space and missile defense missions - Researched multiple vulnerability assessments reports and various threat and hazard assessment sources for critical infrastructure - Remediated analysis of identified vulnerabilities at specific critical infrastructure assets key to USSTRATCOM space and missile defense missions - Researched and identify risk mitigation options to ensure mission accomplishment - Developed concepts and requirements, design development, tool engineering, prototyping, and test & evaluation of a graphical mission impact tool. ***FY 2017 Plans:*** - Continued analysis, studies and research of Space Sector critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions - Future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments - Remediation analysis of identified vulnerabilities at critical infrastructure assets necessary for individual USSTRATCOM missions - Research and identify risk mitigation options to ensure mission accomplishment. - Spiral improvements to the graphical mission impact tool					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 670373 / *DCIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Concept and requirement development, design development, tool engineering, prototyping, and test & evaluation of a tool combining risk assessment methodology with threat and hazard evaluations of critical infrastructure assets ***FY 2018 Base Plans:*** Supports analysis, studies and research of critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions, to include focusing efforts of future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments. ***FY 2018 OCO Plans:*** No OCO Requested					
Accomplishments/Planned Programs Subtotals	0.497	0.491	0.492	0.000	0.492

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Projects funded through DCIP will be awarded using competitive contracts to the maximum extent possible.

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-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / *Service Support to STRATCOM - Space Activities*	Project (Number/Name) 672486 / *JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
672486: *JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES*	-	3.825	2.693	7.453	0.000	7.453	7.483	7.524	7.570	7.639	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY18 PDM plus up of $4.8M per year thru the FYDP.

A. Mission Description and Budget Item Justification

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of NAVWAR knowledge, and provides subject matter expertise support to the warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC conducted POFAs are a key element in evaluating US and Coalition NAVWAR capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support – Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.

2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority – Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: PNT Operational Field Assessments	3.825	2.693	7.453	-	7.453
Description: The JNWC will investigate, operationally assess, and simulate potential threats and mitigation strategies for denial of blue force PNT capabilities as well as preventing the hostile use of PNT information. Major Performers - Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 672486 / *JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: - Investigated, operationally assess, and simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Developed mitigation strategies for preventing the hostile use of Positioning, Navigation and Timing (PNT) information. ***FY 2017 Plans:*** - Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information. ***FY 2018 Base Plans:*** - Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information.					
Accomplishments/Planned Programs Subtotals	3.825	2.693	7.453	-	7.453

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

New contracts will be awarded using competitive procedures to the maximum extent possible.

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-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1201921F / *Service Support to STRATCOM - Space Activities*	Project (Number/Name) 67A011 / *Space Analysis and Application Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
67A011: *Space Analysis and Application Development*	-	5.066	5.490	6.310	0.000	6.310	6.294	7.099	7.215	7.362	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Analysis and Application Development program Integrates space based effects into Department's 'Model of Record' for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) campaign level M&S tool. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions.

The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. Funds are necessary to update current government-owned software to ingest and disseminate new data sources from Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Space Campaign Modeling and Simulation, Development/Modification/Verification/Validation	5.066	4.500	5.492	0.000	5.492
Description: Developed, modifies, verifies, and validates new models for space mission areas and modifies existing models to portray new capabilities. ***FY 2016 Accomplishments:*** - Enhance STORM non-lethal effects modeling - Continue modifications to support upcoming AOAs and studies - Continue integration of Ionospheric scintillation forecast accuracy modifications into mission models and various communication analysis tools ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Determine touchpoints between space capabilities and the Offensive Counter Air and Fighter Escort / Fighter Sweep mission tasks within STORM - Refine/develop software code to represent US and adversary space interactions in engagement and mission level models - Develop software to input space effects from engagement and mission level models into STORM campaign-level M&S to determine effect of degraded space on U.S. military campaigns and global operations - Develop test cases to evaluate performance of campaign model - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations ***FY 2018 Base Plans:*** Determine touchpoints between space capabilities and mission tasks for additional Joint Mission Threads. - Extend space modeling, simulation and analysis process to classified space capabilities - Expand analysis of degraded/denied space capabilities to an additional Theater - Assess use of Joint Space Doctrine & Tactics Forum (JSDTF) Space Modeling, Simulation and Analysis process in a different campaign model such as Joint Interagency Contingency Model (JICM) - Support cost-benefit analyses of Offensive/Defensive Space Control alternatives with quantifiable impacts to warfighter operations - Provide Modeling, Simulation, and Analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV) - Incorporate enterprise-level model into overall JSDTF Space Modeling, Simulation and Analysis process to further inform senior leaders on future space architectures - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations ***FY 2018 OCO Plans:*** No OCO Requested					
Title: Data Integration and Fusion Center ***Description:*** USSTRATCOM/J8 Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. The DIFC will work to update current government-owned software to ingest and disseminate new data sources from	0.000	0.990	0.818	0.000	0.818

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** The DIFC will investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines. ***FY 2018 Base Plans:*** The DIFC will continue to investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines. ***FY 2018 OCO Plans:*** No OCO Requested					
Accomplishments/Planned Programs Subtotals	5.066	5.490	6.310	0.000	6.310

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	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	-	-

Remarks

D. Acquisition Strategy

Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 1201921F / *Service Support to STRATCOM - Space Activities*	**Project (Number/Name)** 67A011 / *Space Analysis and Application Development*

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.