

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604425F I Space Situation Awareness Systems							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	1,610.224	304.380	9.462	32.374	-	32.374	50.598	130.815	151.320	154.027	-	2,443.200
65A006: Space Based Space Surveillance	970.522	4.040	-	31.490	-	31.490	50.598	130.815	151.320	154.027	-	1,492.812
65A009: Space Fence	567.548	279.303	-	-	-	-	-	-	-	-	-	846.851
65A012: Net-centric Sensors and Data Sources	63.858	10.559	7.092	-	-	-	-	-	-	-	-	81.509
65A026: C-Band Radar	8.296	10.478	2.370	0.884	-	0.884	-	-	-	-	-	22.028
Program MDAP/MAIS Code: 328												
Note In FY2015, PE 0604425F Space Situation Awareness Systems, Project 65A009 Space Fence efforts were transferred to PE 0604426F Space Fence, Project 65A009 for acquisition transparency of ACAT I programs.												
A. Mission Description and Budget Item Justification Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations as described in the approved SSA Initial Capabilities Document (ICD). As the foundation for space control, SSA encompasses intelligence on adversary space operations; surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. This Program Element (PE) develops new Air Force sensors, and improved information capabilities for integration across the SSA network; it also includes developmental planning and technology forecasting for future blocks and emerging needs. A companion program element, 0305940F, Space Situational Awareness Operations, fields, upgrades, operates, and sustains existing sensors and information integration capabilities within the SSA network. An additional companion program element, 0305614F, JSpOC Mission System, processes surveillance of all space objects and activities, maintains detailed reconnaissance of space assets, fuses space data, maintains awareness of cooperative space assets, and allows JFCC-Space to conduct integrated C2 of space forces. Development activities are necessary to deploy new advanced sensors capable of searching for, tracking, and identifying the expanding number of debris objects on orbit as well as the increasing number of satellites launched by other nations, of which many are smaller and more capable than previous spacecraft. These activities are also required to better integrate the disparate elements of SSA in order to enable rapid and responsive space operations. This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0604425F I Space Situation Awareness Systems			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	314.625	9.462	13.201	-	13.201
Current President's Budget	304.380	9.462	32.374	-	32.374
Total Adjustments	-10.245	-	19.173	-	19.173
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-10.245	-			
• Other Adjustments	-	-	19.173	-	19.173
Change Summary Explanation					
FY2014 reduction of -\$10.245M for SBIR					
FY2016 increase to accelerate Space Based Surveillance System Follow-On launch date					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A006: <i>Space Based Space Surveillance</i>	970.522	4.040	-	31.490	-	31.490	50.598	130.815	151.320	154.027	-	1,492.812
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification <p>The Space-Based Space Surveillance (SBSS) Block 10 satellite was launched September 2010 and is currently operational. The SBSS Follow-On program will develop and deliver a system that continues providing space object surveillance from space post SBSS Block 10 End-of-Life. The Follow-On program is based upon the current Space Situational Awareness (SSA) Initial Capabilities Document (ICD) architectural requirements focused on protecting High Value Assets (HVAs) in Geosynchronous Orbit (GEO). It will provide the capability to search, detect, and track objects primarily in deep space GEO from a space-based sensor. Surveillance from space augments existing ground sensors with timely 24-hour, above the weather collection of GEO satellite metric data only possible with a space based sensor and then communicates its findings to the Joint Space Operations Center (JSpOC).</p>												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: SBSS Follow-On Design & Development Description: Performs space based SSA analysis, research, and development for the SBSS system. FY 2014 Accomplishments: Lawrence Livermore National Laboratory (LLNL) began studying the potential for using the Space-based Telescope for Actionable Refinement of Ephemeris (STARE) effort to observe deep space objects. Initial SBSS Follow-On concept analysis and solution refinement continued at multiple locations. FY 2015 Plans: N/A FY 2016 Plans: Transition technology from the ORS-5 mission to begin development of payload hardware.									4.040	-	31.490	
Accomplishments/Planned Programs Subtotals									4.040	-	31.490	
C. Other Program Funding Summary (\$ in Millions) N/A Remarks												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>
<p><u>D. Acquisition Strategy</u></p> <p>Architectural studies have been conducted to determine the best way to provide future space-based space surveillance beyond the life of the current system.</p> <p>The Acquisition Strategy for SBSS Follow-On is under development.</p> <p><u>E. Performance Metrics</u></p> <p>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.</p>		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / Space Situation Awareness Systems				Project (Number/Name) 65A006 / Space Based Space Surveillance					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 10 design and development	C/CPAF	Northrop Grumman : Redondo Beach, CA	549.291	-		-		-		-		-	-	549.291	-
Block 10 Technical risk reduction, mission planning & mission data processing	SS/CPFF	MIT Lincoln Laboratory : Lexington, MA	29.271	-		-		-		-		-	-	29.271	-
Block 10 Launch vehicle integration	MIPR	Space and Missile Systems Center Det. : Kirtland AFB, NM	85.644	-		-		-		-		-	-	85.644	-
Block 10 contractor ops & Interim Contract Support	SS/CPAF	Boeing : Huntington Beach, CA	152.223	-		-		-		-		-	-	152.223	-
SBSS Follow-on Design & Development	Various	Various : Various,	8.430	2.464		-		24.790	Dec 2015	-		24.790	486.760	522.444	-
SSA risk reduction and technology transfer	Various	Various : Various,	33.247	-		-		-		-		-	-	33.247	-
STARE Study and Design work	MIPR	Lawrence Livermore National Laboratory : Livermore, CA	0.000	1.576	Jul 2014	-		-		-		-	-	1.576	-
Subtotal			858.106	4.040		-		24.790		-		24.790	486.760	1,373.696	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support, FFRDC	SS/CPFF	Aerospace : Los Angeles, CA	44.559	-		-		3.100	Nov 2015	-		3.100	-	47.659	-
Engineering and Technical Services	C/FFP	AT&T Government Solutions, Inc : Los Angeles, CA	22.296	-		-		2.000	Nov 2015	-		2.000	-	24.296	-
Other Support Activities	Various	Various : Los Angeles, CA	30.867	-		-		-		-		-	-	30.867	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>					
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			97.722	-		-		5.100		-		5.100	-	102.822	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Activities (other PMA)	Various	Various : Los Angeles, CA	9.728	-		-		1.300	Nov 2015	-		1.300	-	11.028	-
SMC Financial Services	C/FFP	Tecolote Research, Inc : Los Angeles, CA	4.966	-		-		0.300	Nov 2015	-		0.300	-	5.266	-
Subtotal			14.694	-		-		1.600		-		1.600	-	16.294	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			970.522	4.040		-		31.490		-		31.490	486.760	1,492.812	-
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>		Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>	

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Pre-Phase A Acquisition Planning																												
Acq Strategy, RFP Dev and Source Selection																												
MDD																												
AoA Sufficiency																												
Milestone A																												
Contract Award																												
Tech Dev / Engineering and Manufacturing Development / Production																												
Preliminary Design Review (PDR)																												
CDD																												
Milestone B																												
Critical Design Review (CDR)																												
CPD																												
Milestone C																												
Launch																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-Phase A Acquisition Planning	1	2014	1	2016
Acq Strategy, RFP Dev and Source Selection	1	2016	2	2017
MDD	2	2016	2	2016
AoA Sufficiency	4	2016	4	2016
Milestone A	1	2017	1	2017
Contract Award	3	2017	3	2017
Tech Dev / Engineering and Manufacturing Development / Production	3	2017	4	2020
Preliminary Design Review (PDR)	1	2018	1	2018
CDD	3	2018	3	2018
Milestone B	4	2018	4	2018
Critical Design Review (CDR)	4	2018	4	2018
CPD	1	2020	1	2020
Milestone C	1	2020	1	2020
Launch	4	2020	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A009 / <i>Space Fence</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A009: <i>Space Fence</i>	567.548	279.303	-	-	-	-	-	-	-	-	-	846.851
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note In FY2015, PE 0604425F Space Situation Awareness Systems, Project 65A009 Space Fence efforts were transferred to PE 0604426F Space Fence, Project 65A009 for acquisition transparency of ACAT I programs.												
A. Mission Description and Budget Item Justification The Space Fence effort will develop a system of ground-based sensors to improve upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to up to 100,000+ objects, while working in concert with other network sensors.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Space Fence									279.303	-	-	
Description: Develops S-band SSA radar system to provide detection and tracking capability of objects in LEO.												
FY 2014 Accomplishments: The Engineering, Manufacturing and Development / Production and Deployment contract award was made on 2 Jun 14 to Lockheed Martin Mission Systems and Training to conduct EMD, Production and Deployment activities in support of integrated system design, culminating in a Critical Design Review (CDR) and development of the Space Fence Operations Center (SOC) and Site 1 Radar hardware and software. The purchase of long lead items were ordered and manufacturing initiated.												
Accomplishments/Planned Programs Subtotals									279.303	-	-	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• RDTE: PE 0604426F: <i>Space Fence</i>	-	200.082	243.909	-	243.909	196.042	68.503	5.316	-	-	-	
• OPAF: BA03: 836830: <i>Space Fence</i>	-	-	-	-	-	-	-	46.337	50.591	Continuing	Continuing	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604425F / Space Situation Awareness Systems				Project (Number/Name) 65A009 / Space Fence			
C. Other Program Funding Summary (\$ in Millions)											
			FY 2016	FY 2016	FY 2016					Cost To	
Line Item	FY 2014	FY 2015	Base	OCO	Total	FY 2017	FY 2018	FY 2019	FY 2020	Complete	Total Cost
Remarks											
D. Acquisition Strategy											
A single Engineering, Manufacturing and Development / Production and Deployment contract was awarded on 2 Jun 14 to Lockheed Martin Mission Systems and Training. The contract will take Lockheed through Critical Design Review, fabrication, integration, test, production and deployment, with up to two years of Interim Contractor Support (ICS). The program will utilize a two increment approach. Increment 1/Initial Operational Capability (IOC) will consist of successful operations at the first radar site located in the Kwajalein Atoll and the Space Operations Center (SOC) at a CONUS location. Increment 2 will include completion of the second radar at a location which is to be determined pending negotiations with the proposed host nation.											
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.											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A009 / <i>Space Fence</i>					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Design and development #1	C/FFP	Lockheed Martin : Moorestown, NJ	30.000	-		-		-		-		-	-	30.000	30.000
Design and development #2	C/FFP	Northrop Grumman : Linthicum Heights, MD	16.023	-		-		-		-		-	-	16.023	15.922
Design and development #3	C/FFP	Raytheon : Sudbury, MA	30.000	-		-		-		-		-	-	30.000	30.000
System design and prototyping #1	C/FFP	Lockheed Martin : Moorestown, NJ	111.689	-		-		-		-		-	-	111.689	111.734
System design and prototyping #2	C/FFP	Raytheon : Sudbury, MA	111.582	-		-		-		-		-	-	111.582	111.615
System development	C/FPIF	Lockheed Martin : Moorestown, NJ	180.000	265.388	Jun 2014	-		-		-		-	-	445.388	1,255.000
Risk Reduction Study #2	C/FFP	Raytheon : Sudbury, MA	4.950	-		-		-		-		-	-	4.950	-
Risk Reduction Study #1	C/FFP	Lockheed Martin : Moorestown, NJ	4.947	-		-		-		-		-	-	4.947	-
Subtotal			489.191	265.388		-		-		-		-	-	754.579	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Various (Independent Program Assessment, site survey, travel, software, SATAF)	Various	Various : Various,	1.165	0.625	Oct 2013	-		-		-		-	-	1.790	-
Design Oversight and Management #1	SS/FP	Carnegie Mellon University : Pittsburgh, PA	0.235	0.330	Nov 2013	-		-		-		-	-	0.565	-
Subtotal			1.400	0.955		-		-		-		-	-	2.355	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A009 / <i>Space Fence</i>					
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test - 46th Test Group	PO	46th Test Group : Eglin AFB, FL	0.946	0.989	Jan 2014	-		-		-		-	-	1.935	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.023	0.023	Jan 2014	-		-		-		-	-	0.046	-
Subtotal			0.969	1.012		-		-		-		-	-	1.981	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support (Infrastructure) (PMA)	Various	Various : Various,	16.084	1.338	Oct 2013	-		-		-		-	-	17.422	-
Program Office Support, Technical Studies and Analysis, Systems Engineering and Integration Management (PMA)	Various	Various : Various,	6.245	0.682	Oct 2013	-		-		-		-	-	6.927	-
Development Review and Management (#1) (PMA)	C/CPFF	Odyssey Systems : Wakefield, MA	9.347	1.152	Dec 2013	-		-		-		-	-	10.499	-
Development Review and Management (#2) (PMA)	C/CPFF	Jacobs Technology : Tullehoma, TN	9.993	1.955	Dec 2013	-		-		-		-	-	11.948	-
Design Oversight and Management #2	SS/FP	MITRE Corp : Bedford, MA	18.894	4.341	Nov 2013	-		-		-		-	-	23.235	-
Design Oversight and Management #3	SS/FP	MIT Lincoln Laboratory : Lexington, MA	15.425	2.480	Nov 2013	-		-		-		-	-	17.905	-
Subtotal			75.988	11.948		-		-		-		-	-	87.936	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604425F / Space Situation Awareness Systems					Project (Number/Name) 65A009 / Space Fence					
		Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		567.548	279.303		-		-		-		-	-	846.851	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>		Project (Number/Name) 65A009 / <i>Space Fence</i>	

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Milestone B Increment 1																												
Increment 1 EMD																												
Contract Award Increment 1																												
Critical Design Review (CDR) Increment 1																												
Development Test and Evaluation																												
Initial Operational Test and Evaluation																												
Initial Operational Capability (IOC) Increment 1																												
Increment 1 Interim Contractor Support Option 1																												
Increment 1 Interim Contractor Support Option 2																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Increment 1	3	2014	3	2014
Increment 1 EMD	3	2014	2	2019
Contract Award Increment 1	3	2014	3	2014
Critical Design Review (CDR) Increment 1	2	2015	2	2015
Development Test and Evaluation	2	2018	4	2018
Initial Operational Test and Evaluation	1	2019	2	2019
Initial Operational Capability (IOC) Increment 1	2	2019	2	2019
Increment 1 Interim Contractor Support Option 1	3	2019	2	2020
Increment 1 Interim Contractor Support Option 2	3	2020	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A012: <i>Net-centric Sensors and Data Sources</i>	63.858	10.559	7.092	-	-	-	-	-	-	-	-	81.509
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Net-centric Sensors and Data Sources (N-CSDS) efforts migrate the Space Surveillance Network, non-traditional SSA sensors and data sources for use by any entity (primarily the Joint Space Operations Center (JSpOC)) into a net-centric enterprise, enabling more rapid distribution of data to the warfighter based on an AFSPC provided prioritization list. This effort will define and implement the technical architecture, and support the concept to provide the foundational data necessary to enable rapid, responsive decisions by the Commander, United States Strategic Command's Joint Functional Component Commander for Space (JFCC Space) and other national capability users to detect, evaluate, attribute space events. This effort builds upon and operationalizes the successful Extended Space Sensor Architecture Advanced Concept Technology Demonstration (ESSA ACTD) and prototypes how disparate and legacy space sensor network data can be translated into a net-centric operating environment. Data will be exposed as defined by published DoD and community interface standards to ensure technical interoperability.

Data exposed from Space Situational Awareness (SSA) sensors and other non-traditional data sources via N-CSDS effort will be integrated into the JMS program (PE 0305614F).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2014	FY 2015	FY 2016
Title: Sensor & Data Integration & Exposure	10.559	7.092	-
Description: Providing Data Exposure and Data Source Integration Net-Centrically for consumption and use by the JSpOC and other users			
FY 2014 Accomplishments: Delivered STSS data and began exposure of classified data source (Concept J) data to JSpOC. Continued maturation of the common data model. Continued effort to expose classified data source (Concept C) to JSpOC.			
FY 2015 Plans: Completing exposure of three classified data sources (Concept C, Concept J, and Concept G). Completing GEODSS Net-Centric delivery.			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	10.559	7.092	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>			
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: 836790: <i>Space Mods Space</i>	2.448	4.577	-	-	-	-	-	-	-	-	19.110
Remarks											
D. Acquisition Strategy											
Project utilizes existing engineering and study contracts and a competitively selected system engineering team to conduct sensor and data source activities.											
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.											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sensor Data Exposure - Sidecar Development	C/Various	MIT/LL : Lexington, MA	11.569	-		-		-		-		-	-	11.569	11.569
Net-Centric Capability Development and Data Exposure	Various	Various : Various,	21.637	6.711	Jan 2014	5.407	Jan 2015	-		-		-	-	33.755	36.317
Systems Engineering and Integration	C/CPFF	Lockheed Martin Integrated Systems : Endicott, NY	15.300	-		-		-		-		-	-	15.300	15.300
Subtotal			48.506	6.711		5.407		-		-		-	-	60.624	63.186
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation Activities	RO	46th Test Squadron : Eglin AFB, FL	1.213	0.140	Jan 2014	-	Jan 2015	-		-		-	-	1.353	1.713
Subtotal			1.213	0.140		-		-		-		-	-	1.353	1.713
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program office Engineering Support (FFRDC)	SS/CPFF	MITRE Corp. : Bedford, MA	3.913	0.621	Oct 2013	0.089	Oct 2014	-		-		-	-	4.623	4.782

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force													Date: February 2015		
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>					
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering, Technical, Financial and Other Services (PMA)	C/Various	Various : Los Angeles, CA	10.226	3.087	Dec 2013	1.596	Dec 2015	-		-		-	-	14.909	15.189
Subtotal			14.139	3.708		1.685		-		-		-	-	19.532	19.971
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			63.858	10.559		7.092		-		-		-	-	81.509	84.870
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>			Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Common Data Model v3																												
GEODSS Site 1 Developmental Test																												
Concept C																												
Common Data Model (Integration with JMS)																												
Concept J Database Exposure Adapters																												
Concept G																												
GEODSS Site 1 Operational Test																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Common Data Model v3	3	2014	4	2014
GEODSS Site 1 Developmental Test	3	2014	3	2014
Concept C	1	2015	2	2015
Common Data Model (Integration with JMS)	1	2015	4	2015
Concept J Database Exposure Adapters	2	2015	2	2015
Concept G	3	2015	4	2015
GEODSS Site 1 Operational Test	4	2015	4	2015

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A026 / <i>C-Band Radar</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A026: <i>C-Band Radar</i>	8.296	10.478	2.370	0.884	-	0.884	-	-	-	-	-	22.028
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
A Memorandum of Understanding (MOU) between the United States Air Force and the Australian Department of Defence was signed by the United States Secretary of Defense and the Australian Minister for Defence on November 14, 2012 to support this international effort to provide an improved space situational awareness capability in the Australian geographic area. The MOU includes description of the need for Australian funding for part of the relocation project. The project will relocate a C-Band radar to Harold E. Holt Naval Communications Station (HEH NCS) in Australia and upgrade it to perform a Space Situational Awareness (SSA) mission. When completed, the radar will provide data for catalog maintenance, space object identification, and support for special events (e.g., space launches, satellite breakups, and maneuvers).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: C-Band Radar									10.478	2.370	0.884	
Description: Relocates a C-Band Radar to HEH NCS in Australia and upgrades it to perform a Space Situational Awareness (SSA) mission.												
FY 2014 Accomplishments: Successful design review; software and hardware upgrades progressed; radar disassembled and shipped to Australia; reassembly 90% completed.												
FY 2015 Plans: Completed radar assembly and system upgrades; begin development testing and evaluation.												
FY 2016 Plans: Begin Developmental Test, Operational Test, and Initial Operating Capability planned.												
Accomplishments/Planned Programs Subtotals									10.478	2.370	0.884	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• OPAF: PE 35940F: Line Item # 861900: <i>C-Band Radar Spares and Repairs</i>	-	-	4.868	-	4.868	4.861	-	-	-	9.800	9.800	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604425F / Space Situation Awareness Systems				Project (Number/Name) 65A026 / C-Band Radar			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2016</u>	<u>FY 2016</u>	<u>FY 2016</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Complete</u>	<u>Total Cost</u>
<u>Remarks</u>											
D. Acquisition Strategy											
This project will utilize a mix of experienced contractors, FFRDC and Air National Guard resources to upgrade the C-Band system and complete the relocation to Australia.											
The MOU between the United States Air Force and the Australian Department of Defence includes the need for Australian funding for part of the relocation project. Site renovation in Australia began in FY 2013 as Australian funding became available as reflected on the attached schedule.											
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.											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A026 / <i>C-Band Radar</i>					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C-Band Radar Upgrades	TBD	Various : Various,	7.444	9.046	Dec 2013	0.759	Dec 2014	0.111	Dec 2015	-		0.111	-	17.360	15.665
Subtotal			7.444	9.046		0.759		0.111		-		0.111	-	17.360	15.665
Remarks															
Funding will be used to complete the Radar Open Systems Architecure (ROSA) and Space Surveillance Support Software (S4) upgrades to the existing C-Band Radar.															
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test, Operational Test, & Initial Operating Capability Test	Various	Various : Los Angeles, CA	0.000	0.381	May 2014	0.286	Oct 2014	0.368	Oct 2015	-		0.368	-	1.035	0.613
Subtotal			0.000	0.381		0.286		0.368		-		0.368	-	1.035	0.613
Remarks															
Test support is being provided by the 96th Test Wing Eglin AFB and 17th Test Squadron Schriever AFB.															
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Oversight (PMA)	Various	SMC/SY : Los Angeles, CA	0.852	1.051	Oct 2013	1.325	Oct 2014	0.405	Oct 2015	-		0.405	-	3.633	2.889
Subtotal			0.852	1.051		1.325		0.405		-		0.405	-	3.633	2.889

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>					Project (Number/Name) 65A026 / <i>C-Band Radar</i>					
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			8.296	10.478		2.370		0.884		-		0.884	-	22.028	19.167

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>		Project (Number/Name) 65A026 / <i>C-Band Radar</i>	

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Design Review (Jan 2014)																												
Complete Radar Renovation/Relocation																												
Complete Design/Development																												
Test																												
IOC/Operations (Sep 2016)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Design Review (Jan 2014)	2	2014	2	2014
Complete Radar Renovation/Relocation	1	2014	4	2015
Complete Design/Development	1	2014	4	2015
Test	1	2016	3	2016
IOC/Operations (Sep 2016)	4	2016	4	2016