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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 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604426F / <i>Space Fence</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	0.000	191.708	240.692	168.364	0.000	168.364	50.217	5.265	0.000	0.000	0.000	656.246
65A009: <i>Space Fence</i>	0.000	191.708	240.692	168.364	0.000	168.364	50.217	5.265	0.000	0.000	0.000	656.246
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**Program MDAP/MAIS Code:** 438

**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 100,000+ objects, while working in concert with other network sensors. Requirements are identified in the June 2012 approved Space Fence Capabilities Development Document (CDD).

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.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	200.082	243.909	196.042	0.000	196.042
Current President's Budget	191.708	240.692	168.364	0.000	168.364
Total Adjustments	-8.374	-3.217	-27.678	0.000	-27.678
• Congressional General Reductions	0.000	-0.717			
• Congressional Directed Reductions	0.000	-2.500			
• 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	-8.374	0.000			
• Other Adjustments	0.000	0.000	-27.678	0.000	-27.678

**Change Summary Explanation**

FY16: -\$2.5M Congressional Mark

FY17: -\$27.3M Budget reduced from Contract Ceiling to Contract Target; -\$0.378M inflation adjustment.

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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>Title:</b> Space Fence</p> <p><b>Description:</b> Develops S-band SSA radar system to provide detection and tracking capability of objects in Low Earth Orbit.</p> <p><b>FY 2015 Accomplishments:</b> Continued Engineering and Manufacturing Development (EMD), Production and Deployment activities. These activities included: the continued construction of Site 1 facilities; continued manufacturing and integration of radar components and assemblies; and the further development and integration of the Space Fence Operations Center (SOC) and Site 1 Radar hardware and software. Initiated SOC facility preparation.</p> <p><b>FY 2016 Plans:</b> Continue system manufacture, software builds, in-plant integration and test, training, technical orders, and technical manual development. This includes the majority of radar facility and operations building construction as well as power plant annex construction and commissioning and radar final production and test.</p> <p><b>FY 2017 Plans:</b> Complete on-island assembly of the Receive and Transmit arrays. Conduct Contractor installation, checkout and test of the system at the Kwajalein Atoll, Marshall Islands and the SOC at the Reagan Test Site Operations Center, Huntsville, AL. (ROC-H). Conduct Deputy Assistant Secretary of Defense (DASD)/Development Test &amp; Evaluation (DT&amp;E) and Director, Operational Test and Evaluation (DOT&amp;E) assessments of system level capabilities. Conduct Developmental Test Readiness Review (DTRR) to confirm and certify readiness to enter DT&amp;E.</p>	191.708	240.692	168.364
<b>Accomplishments/Planned Programs Subtotals</b>	191.708	240.692	168.364

<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>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• SPAF: BA01: Line Item	0.000	0.000	0.000	0.000	0.000	0.000	45.982	50.199	12.776	Continuing	Continuing
23SFNC: <i>Space Fence</i>											

**Remarks**

**E. Acquisition Strategy**

A single Engineering Manufacturing and Development (EMD) Production and Deployment contract was awarded on 2 Jun 14 to Lockheed Martin Mission Systems and Training. The contract will take the contractor through Critical Design Review (CDR), 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

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at the first radar site located in the Kwajalein Atoll and the SOC at ROC-H. Increment 2 (contract option) will include completion of the second radar at a location which is to be determined pending negotiations with the proposed host nation.

**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 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604426F / <i>Space Fence</i>	<b>Project (Number/Name)</b> 65A009 / <i>Space Fence</i>
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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			
Space Fence Development	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	171.052	Apr 2015	218.101	Nov 2015	150.894	Dec 2016	0.000		150.894	35.543	575.590	914.699
Various (Independent Program Assessment, site survey, software, Site Activation Task Force (SATAF))	Various	Various : Various	0.000	5.388	Oct 2014	4.148	Oct 2015	1.529	Oct 2016	0.000		1.529	1.529	12.594	-
Design Oversight and Management	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	1.150	Nov 2014	1.150	Nov 2015	0.682	Nov 2016	0.000		0.682	0.000	2.982	-
<b>Subtotal</b>			0.000	177.590		223.399		153.105		0.000		153.105	37.072	591.166	-

**Remarks**  
 Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)  
 Product Development: \$774.994

<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			
Test - 46th Test Group	PO	46th Test Group : Eglin AFB, FL	0.000	1.520	Jan 2015	2.086	Jan 2016	1.983	Jan 2017	0.000		1.983	4.009	9.598	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.000	0.028	Jan 2015	0.049	Jan 2016	0.185	Jan 2017	0.000		0.185	0.370	0.632	-
<b>Subtotal</b>			0.000	1.548		2.135		2.168		0.000		2.168	4.379	10.230	-

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<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			

**Remarks**  
Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)  
Test and Evaluation: \$1.366

<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			
A&AS 1	Various	Various : Various	0.000	0.849	Oct 2014	0.531	Oct 2015	1.700	Oct 2016	0.000		1.700	2.261	5.341	-
A&AS 2	Various	Various : Various	0.000	0.908	Oct 2014	5.937	Oct 2015	4.518	Oct 2016	0.000		4.518	2.907	14.270	-
A&AS 3	C/CPIF	Odyssey Systems : Wakefield, MA	0.000	1.861	Dec 2014	0.763	Dec 2015	0.700	Dec 2016	0.000		0.700	4.195	7.519	-
A&AS 4	C/CPFF	Jacobs Technology : Tullahoma, TN	0.000	1.714	Dec 2014	2.422	Jan 2016	1.781	Dec 2016	0.000		1.781	4.668	10.585	-
FFRDC - CM	SS/FP	Carnegie Mellon : Pittsburgh, PA	0.000	0.475	Nov 2014	0.000		0.000		0.000		0.000	0.000	0.475	-
FFRDC - MITRE	SS/FP	MITRE Corp : Bedford, MA	0.000	5.349	Oct 2014	4.311	Nov 2015	3.368	Oct 2016	0.000		3.368	0.000	13.028	-
FFRDC - MIT LL	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	1.414	Oct 2014	1.194	Dec 2015	1.024	Nov 2016	0.000		1.024	0.000	3.632	-
<b>Subtotal</b>			0.000	12.570		15.158		13.091		0.000		13.091	14.031	54.850	-

**Remarks**  
Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)  
Management Services: \$68.683

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	191.708	240.692	168.364	0.000	168.364	55.482	656.246	-

**Remarks**



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2017 Air Force **Date:** February 2016

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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 1 EMD	1	2015	2	2019
Critical Design Review (CDR) Increment 1	2	2015	3	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	2	2021

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