

UNCLASSIFIED

PE NUMBER: 0604425F

PE TITLE: Space Situation Awareness Systems

Exhibit R-2, RDT&E Budget Item Justification	DATE May 2009
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems
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Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	206.362	209.266	308.134	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A006 Space-Based Space Surveillance	169.167	120.039	177.104	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A008 Integrated Space Situation Awareness	23.347	44.220	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A009 Space Fence	13.848	45.007	90.228	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A012 Net-centric Sensors and Data Sources	0.000	0.000	18.357	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A037 Space Surveillance Telescope	0.000	0.000	6.895	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A038 SSA Environmental Monitoring	0.000	0.000	15.550	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

Space Situation Awareness (SSA) is knowledge of all aspects of space related to operations. 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 develops new Air Force sensors for the SSA network and improved information capabilities for integration across it; also includes developmental planning and technology needs forecasting for future blocks and emerging needs. A companion program element, 0305940F, Space Situation Awareness Operations, fields, upgrades, operates, and sustains sensors and information integration capabilities within that network. Development activities are necessary to deploy new, advanced sensors capable of finding, fixing, tracking, and reconnoitering the expanding number of debris objects on orbit as well as the increasing number of satellites launched by other nations, many of them 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, responsive space operations.

These efforts are in Budget Activity 5, System Development and Demonstration, because they develop new SSA capabilities.

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

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

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Previous President's Budget	196.363	210.501	319.962
(U) Current PBR/President's Budget	206.362	209.266	308.134
(U) Total Adjustments	9.999	-1.235	
(U) Congressional Program Reductions		-0.667	
Congressional Rescissions		-0.568	
Congressional Increases			
Reprogrammings	9.999		
SBIR/STTR Transfer			

(U) **Significant Program Changes:**

FY 08: \$9.999M reprogramming for SBSS Block 10 development baseline contract & SBSS Block 10 support on the Minotaur IV contract.

FY10: Reduced \$173.7M in FY10 due to delay of SBSS Block 20 program and transfer of ISSA project into JSpOC Mission System, PE 35614F.

FY10: Increased \$161.9M to develop an SBSS Block 10 Follow-on program; to accelerate SSN sensor and other sensor and data source integration; to provide adequate funding for first site of the Space Fence radar; to transition the DARPA developed SST demonstration program to the Air Force; and to procure the SSA Environmental Monitoring payload and integrate onto host.

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)					PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems			PROJECT NUMBER AND TITLE A006 Space-Based Space Surveillance		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A006 Space-Based Space Surveillance	169.167	120.039	177.104	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	1	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

Building upon the success of the Space-Based Visible (SBV) technology demonstration, which proved the utility of surveilling orbiting objects from space, the Space-Based Space Surveillance (SBSS) project will develop a constellation of optical sensing satellites to search, detect, and track objects in Earth orbit. It will accomplish this via collecting and processing space object identification and satellite metric data, then communicating it to command and control nodes. Surveillance from space augments existing ground sensors with timely 24-hour, all-weather object search capabilities. In conjunction with information from other Space Situation Awareness network sensors, SBSS data will enable more timely detection and tracking of space objects, particularly those in geosynchronous orbits.

This effort is in Budget Activity 5, System Development and Demonstration, because it is developing a new spacecraft system.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	FY 2008	FY 2009	FY 2010
(U) Block 10 design, development, and risk reduction	133.418	38.930	0.500
(U) Block 10 launch vehicle integration	16.248	13.619	0.500
(U) Block 10 contractor ops & Interim Contractor Support	9.680	44.394	62.000
(U) SBSS Follow-on Design, development and risk reduction	0.000	7.586	94.126
(U) Program Office and related support activities, such as, Technical Studies & Analysis, Systems Engineering & Integration	9.821	15.510	19.978
(U) Total Cost	169.167	120.039	177.104

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2008</u> <u>Actual</u>	<u>FY 2009</u> <u>Estimate</u>	<u>FY 2010</u> <u>Estimate</u>	<u>FY 2011</u> <u>Estimate</u>	<u>FY 2012</u> <u>Estimate</u>	<u>FY 2013</u> <u>Estimate</u>	<u>FY 2014</u> <u>Estimate</u>	<u>FY 2015</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) None										

(U) D. Acquisition Strategy

This system is being acquired via a block approach. Block 10 will develop and field a satellite-based capability to replace the SBV sensor with a capability significantly improving the timeliness of data on objects in geosynchronous orbit. Block 10 was awarded competitively under an option on the existing Mission Area Prime Integrating contract for the space control mission area. The planning portion of the Block 10 contractor ops & interim contractor support effort was previously included in the design, development and risk reduction effort.

The specific contracting approach for additional capabilities is being determined. The Air Force is considering multiple approaches for the Follow-on system each with the intent of improving the timeliness capability of the system while minimizing program risk and a potential capability gap.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY				PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems					A006 Space-Based Space Surveillance			
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> Block 10 design and development	C/CPAF	Northrop Grumman, Redondo Beach, CA	131.946	130.958	Nov-07	35.660	Nov-08	0.400	Nov-09	0.000	298.964	
Technical risk reduction, mission planning & mission data processing	SS/CPFF	MIT Lincoln Laboratory, Lexington, MA	3.070	2.460	Jan-08	3.270	Jan-09	0.100	Jan-10	0.000	8.900	
Launch vehicle integration	MIPR	Space and Missile Systems Center Det., Kirtland AFB, NM	9.176	16.248	Nov-07	13.619	Nov-08	0.500	Nov-09	0.000	39.543	
Block 10 contractor ops & Interim Contract Support	SS/CPAF	Boeing, Huntington Beach, CA	0.000	9.680	Jun-08	44.394	Jan-09	62.000	Nov-09	Continuing	TBD	
SBSS Follow-on Design & Development	TBD	TBD	0.000	0.000		7.586	Dec-08	94.126	Feb-10	Continuing	TBD	
Subtotal Product Development			144.192	159.346		104.529		157.126		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u> Program Office Support, Technical Studies & Analysis, Systems Engineering & Integration	Various	Space and Missile Systems Center, Los Angeles AFB, CA	11.248	9.821	Oct-07	15.510	Oct-08	19.978	Oct-09	Continuing	TBD	
Subtotal Support			11.248	9.821		15.510		19.978		Continuing	TBD	0.000
Remarks:												
(U) <u>Test & Evaluation</u> Not applicable												0.000
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Management</u> Not applicable												0.000
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			155.440	169.167		120.039		177.104		Continuing	TBD	0.000

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Exhibit R-3 (PE 0604425F)

Exhibit R-4, RDT&E Schedule Profile

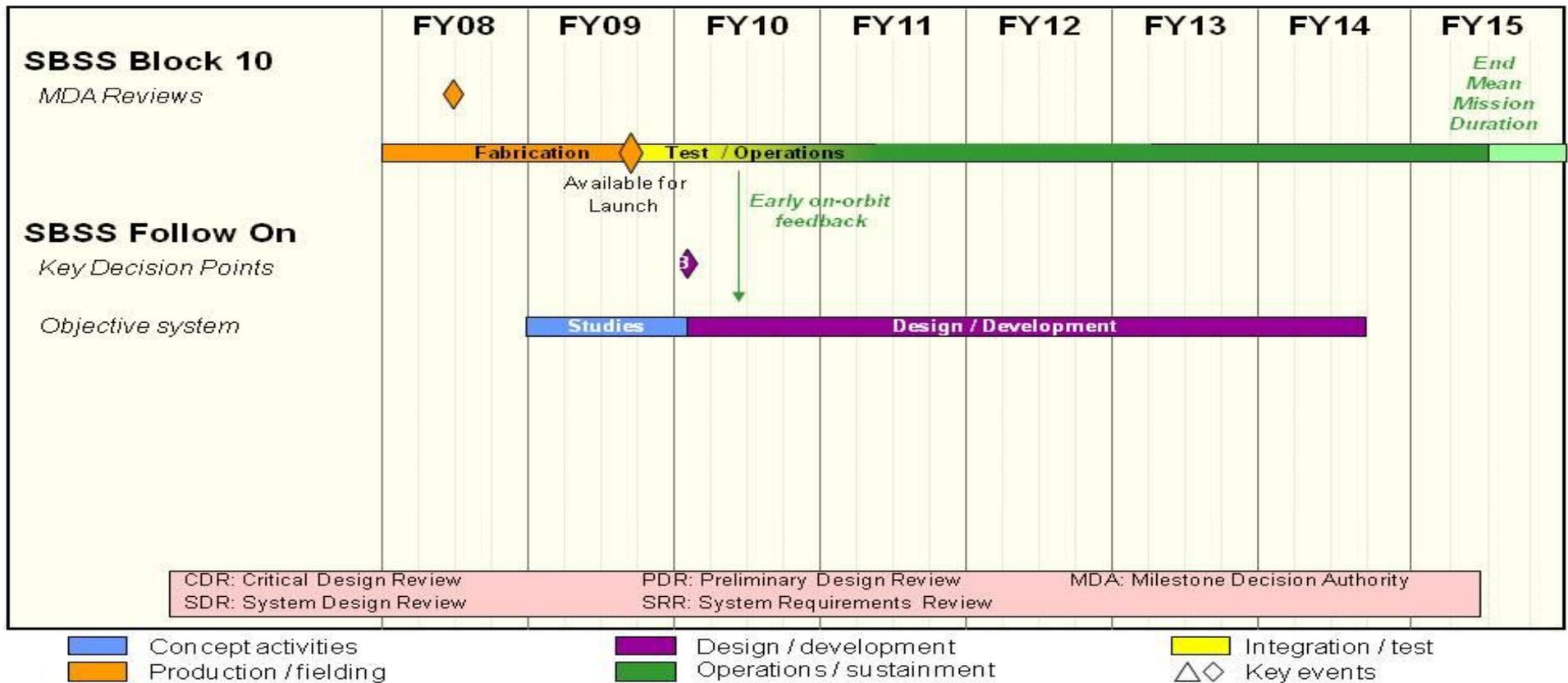
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BUDGET ACTIVITY
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE
A006 Space-Based Space Surveillance



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Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems	PROJECT NUMBER AND TITLE A006 Space-Based Space Surveillance
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	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) <u>Schedule Profile</u>			
(U) Block 10 MDA Review	3Q		
(U) Block 10 Available for Launch		3Q	
(U) SBSS Follow-on Key Decision Point B			1Q

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT NUMBER AND TITLE		
05 System Development and Demonstration (SDD)		0604425F Space Situation Awareness Systems						A008 Integrated Space Situation Awareness		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A008 Integrated Space Situation Awareness	23.347	44.220	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

Beginning in FY10 efforts formerly in the ISSA project have transferred to the JSPOC Mission System (JMS), PE 35164F, except for the ESSA ACTD, which is now executed in the Net-Centric Sensors and Data Sources project.

(U) **A. Mission Description and Budget Item Justification**

Integrated Space Situation Awareness (ISSA) efforts provide the knowledge environment necessary to enable rapid, responsive decisions by the Commander, U.S. Strategic Command's Joint Functional Component Command for Space and other space capability users ensuring the protection of U.S. space assets from proliferating adversary threats. ISSA's focus is the integration of disparate data components of Space Situation Awareness (SSA) to create the timely, actionable knowledge necessary for maintaining space superiority and exercising command and control of Space Surveillance Network (SSN) sensors. The current priority is to migrate and upgrade the legacy space surveillance capabilities from the Space Defense Operations Center (SPADOC) into a net-centric based enterprise enabling automated, real-time correlation, integration, and distribution of data obtained across the traditional sensors in the SSN. In addition to the space surveillance function which detects and tracks space objects, ISSA also develops applications and tools to improve the characterization of non-cooperative space objects by exploiting data from intelligence products and threat processing, reconnaissance and environment communities. This characterization is fundamental to the understanding and predicting of the consequences of space events, threats, and activities. To do so also requires the timely insight into the system status, capabilities and constraints of U.S. military, commercial and allied space assets. To accomplish these efforts ISSA conducts architecture, modeling, and prototyping efforts to keep pace with a changing threat and leverage emerging technology. The ISSA system integrator integrates and delivers this and other applications and services developed to achieve SSA.

These efforts are in Budget Activity 5, System Development and Demonstration, because they develop and demonstrate capabilities for better integration of SSA data or develop architectures guiding associated technical and budgetary planning.

(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) ISSA Integrator and Test & Evaluation	2.887	10.177	
(U) Surveillance and Reconnaissance	10.021	16.804	
(U) Intelligence Products and Threat Processing	1.004	3.300	
(U) Environment	0.987	2.323	
(U) Capability Integration (includes Blue Force Status)	1.437	3.050	
(U) Extended Space Sensors Architecture Advanced Concept Technology Demonstration (ESSA ACTD)	2.797	1.264	
(U) Program Office and related support activities, such as, Systems Engineering and Integration, Technical Studies & Analysis	4.214	7.302	
(U) Total Cost	23.347	44.220	0.000

Exhibit R-2a, RDT&E Project Justification	DATE May 2009
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems	PROJECT NUMBER AND TITLE A008 Integrated Space Situation Awareness
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(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to Complete</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>								
(U) Other Procurement, Air Force (836790, Space Mods Space)	0.000	8.983								8.983

(U) D. Acquisition Strategy

Ongoing ISSA activities utilize existing engineering and study contracts and a competitively selected system integrator and developer. ISSA's focus is on employing a rapid prototyping approach to deploy new systems and tools to progressively advance operational capabilities toward the truly integrated SSA envisioned by existing architectures and roadmaps. The ISSA System Integrator will provide high-level technical oversight support and assist the timely deployment of prototypes and services to the warfighter. ISSA Prototype Developer (IPD) will develop prototypes that provide subsets of the capabilities described in the draft ISSA Capabilities Development Document (CDD) and other documents. For each prototype, the IPD shall perform architecting, systems engineering, prototype development, integration and program management - including requirements analysis and allocation, systems integration, DT&E, prototype "fielding", configuration control and prototype sustainment.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems				A008 Integrated Space Situation Awareness			

<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> ISSA Integrator, T&E	CPFF	Booz Allen Hamilton, LA, CA	1.500	2.887	Feb-08	10.177	Nov-08				14.564	
Surveillance and Reconnaissance Intelligence Products and Threat Processing	C/CPAF Various	Various Booz Allen Hamilton, Colorado Springs, CO; TBD	13.421	10.021	Sep-08	16.804	Nov-08				40.246	
Environment Capability Integration (includes Blue Force Status)	Various Various	Various Northrop Grumman, Azuza, CA; Boeing, Seal Beach, CA; MIT Lincoln Laboratory, Lexington, MA; TBD	2.137	1.004	Nov-07	3.300	Oct-08				6.441	
ESSA ACTD	Various	MIT Lincoln Laboratory, Lexington, MA; ITSP, Colorado Springs, CO	2.326	0.987	Nov-07	2.323	Nov-08				5.636	
Subtotal Product Development Remarks:			23.937	19.133		36.918		0.000		0.000	79.988	0.000
(U) <u>Support</u> Program Office and related support activities, such as, Technical Studies & Analysis, Systems Engineering & Integration	Various	Space and Missile Systems Center, Los Angeles AFB, CA	1.127	4.214	Nov-07	7.302	Nov-08				12.643	
Subtotal Support Remarks:			1.127	4.214		7.302		0.000		0.000	12.643	0.000
(U) <u>Test & Evaluation</u>												0.000

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Exhibit R-3, RDT&E Project Cost Analysis	DATE May 2009
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BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)	0604425F Space Situation Awareness Systems				A008 Integrated Space Situation Awareness			
Subtotal Test & Evaluation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:								
(U) <u>Management</u>							0.000	
Not applicable								
Subtotal Management	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Remarks:								
(U) Total Cost	25.064	23.347	44.220	0.000	0.000	92.631	0.000	

Exhibit R-4, RDT&E Schedule Profile

DATE

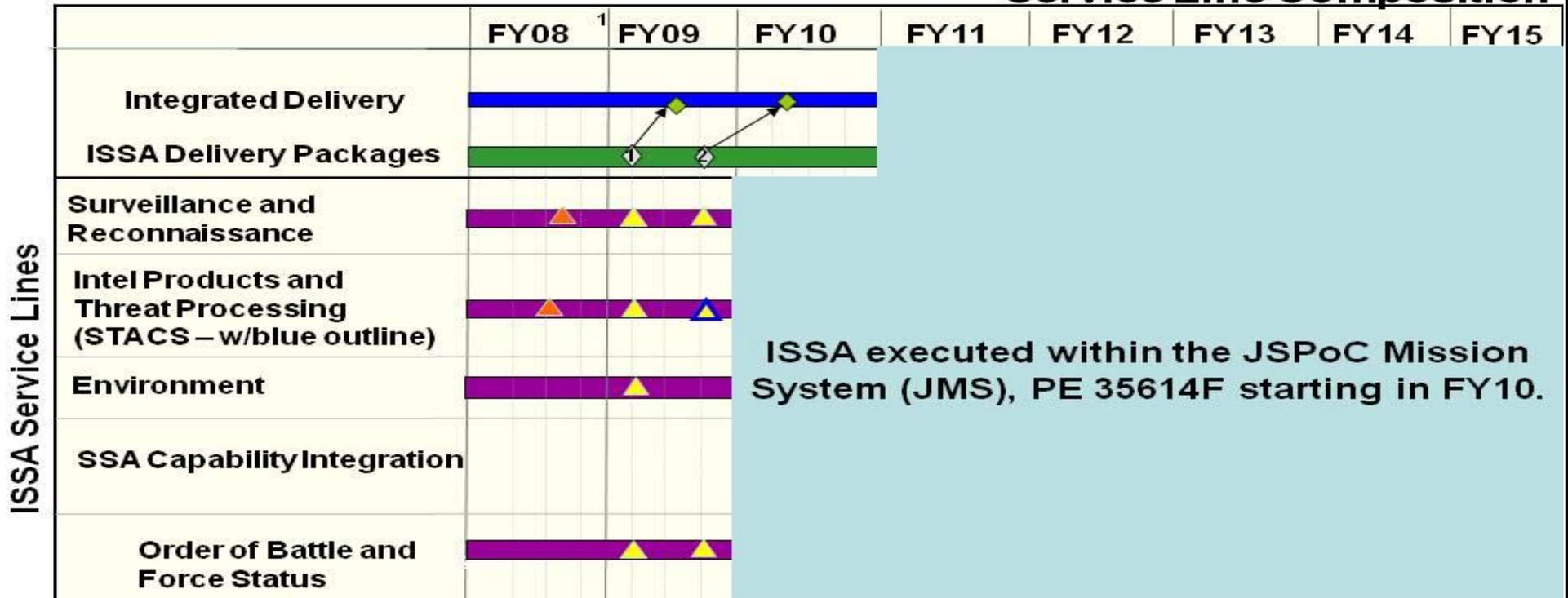
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BUDGET ACTIVITY
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE
A008 Integrated Space Situation Awareness

**ISSA Delivery Package
Schedule and Mission
Service Line Composition**



- ◊ Delivery Package
- ▲ Service(s) from STACS BPAC
- ◆ JI integrated delivery to JSpOC
- ▲ Pre-Delivery Package approach
- ▲ Service(s) from line item part of delivery package

Exhibit R-4a, RDT&E Schedule Detail

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A008 Integrated Space Situation Awareness

(U) Schedule Profile

- (U) Surveillance and Reconnaissance Ops Prototype Delivery
- (U) Intelligence Products & Threat Processing Ops Prototype Delivery
- (U) Environment Ops Prototype Delivery
- (U) Capability Integration Ops Prototype Delivery

FY 2008

3Q
3Q

FY 2009

2-4Q
2-4Q
2Q
2-4Q

FY 2010

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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)					PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems			PROJECT NUMBER AND TITLE A009 Space Fence		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A009 Space Fence	13.848	45.007	90.228	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

The Space Fence effort will develop a system of ground-based sensors to replace the aging Air Force Space Surveillance System (AFSSS), a Very High Frequency radar operational since 1961. By using higher radio frequencies in conjunction with radar transmitters and receivers co-located at sites dispersed worldwide, the Space Fence will provide timely detection of smaller orbiting objects, primarily those in low earth orbit (LEO). As a result, it will expand the uncued detection and tracking capacity of the Space Surveillance Network by an order of magnitude, from 10,000 to 100,000 objects, while working in concert with other network sensors.

This effort is in Budget Activity 5, System Development and Demonstration, because it is developing a new system of ground-based sensors.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Design and development	10.424	38.471	84.026
(U) Design review, management, and support	3.424	6.536	6.202
(U) Total Cost	13.848	45.007	90.228

(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U)									Continuing	TBD

(U) **D. Acquisition Strategy**

The Air Force competitively awarded requirements definition contracts for the effort in FY 2006.

The acquisition strategy consists of competitively awarding up to three (3) Phase A System Design Review (SDR) contracts in FY2009. Following SDR, a full and open competition is planned for award of up to two contracts through Preliminary Design Review (PDR), with a down-select to a single contractor for Block 10 and beyond. The block approach will deliver Space Fence capabilities that follow the principles of time-certain capability/ development and considers user needs and required delivery dates, technology maturity, program risk, and fiscal constraints. Initial Operational Capability (IOC) consisting of the first radar site is desired no later than FY15. The final schedule will be determined in Phase A.

Award of the first competitively awarded contract(s) planned for 4Q FY09.

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05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems					A009 Space Fence			
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
Design and development	C/TBD	TBD		7.689	Jan-08	32.571	Jul-09	78.304	Jan-10	Continuing	TBD	
Design evaluation	SS/FP-LOE	MIT Lincoln Laboratory, Lexington, MA		2.100	Oct-07	2.200	Oct-08	2.266	Oct-09	Continuing	TBD	
Design evaluation	SS/FP-LOE	MITRE Corp., Bedford, MA		0.635	Oct-07	3.700	Oct-08	3.456	Oct-09	Continuing	TBD	
Subtotal Product Development			0.000	10.424		38.471		84.026		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u>												
Program Office Support	Various	Electronic Systems Center, Hanscom AFB, MA; others		1.020	Nov-07	2.084	Nov-08	1.660	Nov-09	Continuing	TBD	
Development review and management	C/FP LOE	Odyssey Systems, Wakefield, MA		1.018	Feb-08	1.743	Feb-09	1.795	Feb-10	Continuing	TBD	
Development review and management	C/FP LOE	Jacobs Technology, Tullahoma, TN		1.226	Jan-08	2.709	Jan-09	2.747	Jan-10	Continuing	TBD	
Development review and management	C/FP LOE	L3/Engility, Billerica, MA		0.160	Oct-07					Continuing	TBD	
Subtotal Support			0.000	3.424		6.536		6.202		Continuing	TBD	0.000
Remarks:												
(U) <u>Test & Evaluation</u>												
Not applicable											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Management</u>												
Not applicable											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U)											0.000	
Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			0.000	13.848		45.007		90.228		Continuing	TBD	0.000

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Exhibit R-3 (PE 0604425F)

Exhibit R-4, RDT&E Schedule Profile

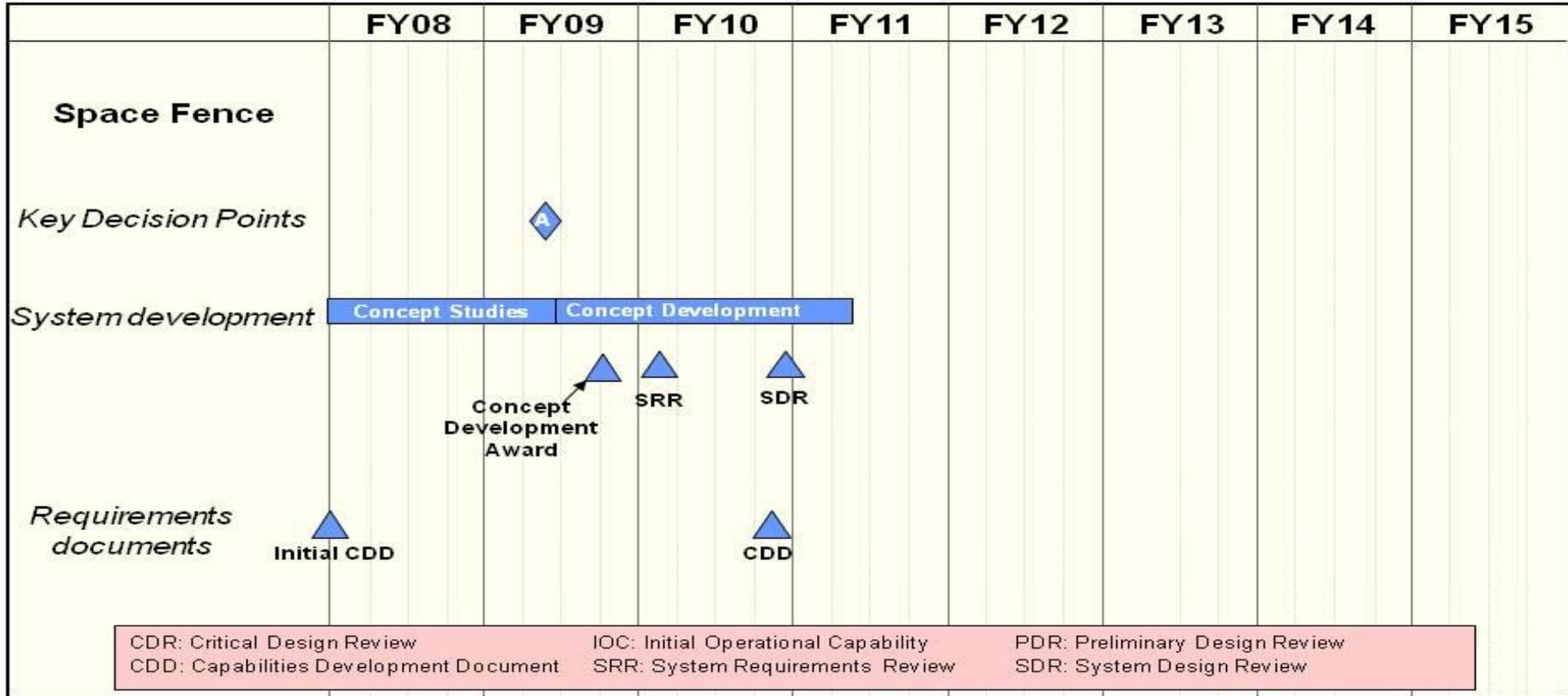
DATE

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BUDGET ACTIVITY
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE
A009 Space Fence



- Concept activities
- Design / development
- Integration / test
- Production / fielding
- Operations / sustainment
- △◇ Key events

Exhibit R-4a, RDT&E Schedule Detail

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05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A009 Space Fence

(U) Schedule Profile

(U) Initial CDD

(U) Key Decision Point A

(U) Concept Definition Contract Award

(U) System Requirements Review

(U) Capability Development Document

(U) System Design Review

FY 2008

1Q

FY 2009

2Q

4Q

FY 2010

1Q

4Q

4Q

Exhibit R-2a, RDT&E Project Justification

DATE
May 2009

BUDGET ACTIVITY 05 System Development and Demonstration (SDD)				PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems				PROJECT NUMBER AND TITLE A012 Net-centric Sensors and Data Sources		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A012 Net-centric Sensors and Data Sources	0.000	0.000	18.357	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

Net-centric Sensors and Data Sources, 65A012, is a new project in FY10, with the exception of the ESSA ACTD transition effort which was included previously in the ISSA program and is now associated with the JSPOC Mission System in PE 35614F.

(U) A. Mission Description and Budget Item Justification

Net-centric Sensors and Data Sources efforts migrates the space surveillance network, non-traditional sensors and data sources for use by any entity (primarily the 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 operational concept, technical architecture, and support concept to provide the foundational data necessary to enable rapid, responsive decisions by the Commander, US Strategic Command's Joint Functional Component Commander for Space and other national capability users to enable the protection of US space assets from proliferating adversary threats. This effort builds upon 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.

These efforts are in Budget Activity 5, System Development & Demonstration, because they develop and demonstrate capabilities for better integration of SSA data.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Concept Definition/Research and Analysis	0.000	0.000	4.659
(U) Sensor & Data Source Integration (Net-centric data interface)	0.000	0.000	10.151
(U) Extended Space Sensors Architecture ACTD (ESSA ACTD)	0.000	0.000	0.100
(U) Program Office and related support activities, such as, Technical Studies and Analysis, Systems Engineering and Integration	0.000	0.000	3.447
(U) Total Cost	0.000	0.000	18.357

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U)										

(U) D. Acquisition Strategy

Sensor and data sources activities utilize existing engineering and study contracts and a competitively selected system engineering team. Sensor integration focus is on supporting the migration of the space surveillance network sensors, non-traditional sensors and data sources to a net-centric architecture based on a AFSPC provided prioritization list. The systems engineering team will provide high-level technical oversight support and assist in the proper execution of the prioritized sensors and

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness
Systems

PROJECT NUMBER AND TITLE

A012 Net-centric Sensors and Data
Sources

data sources.

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Exhibit R-3, RDT&E Project Cost Analysis

DATE

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BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems				A012 Net-centric Sensors and Data Sources			

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
Concept Definition Research and Analysis	Various	Various	0.000	0.000		0.000		4.659	Nov-09	Continuing	TBD	TBD
Sensor & Data Source Integration	Various	Various	0.000	0.000		0.000		10.151	Nov-09	Continuing	TBD	TBD
Systems Engineering and Integration	Various	Various	0.000	0.000		0.000		2.500	Nov-09	Continuing	TBD	TBD
ESSA ACTD	Various	MIT Lincoln Laboratory, Lexington, MA; ITSP, Colorado Springs, CO	0.000	0.000		0.000		0.100	Nov-09		0.100	
Subtotal Product Development			0.000	0.000		0.000		17.410		Continuing	TBD	TBD
Remarks:												
(U) <u>Support</u>												
Program Office and related support activities, such as Technical Studies and Analysis, Systems Engineering and Integration	Various	Various	0.000	0.000		0.000		0.947	Oct-09	Continuing	TBD	TBD
Subtotal Support			0.000	0.000		0.000		0.947		Continuing	TBD	TBD
Remarks:												
(U) <u>Test & Evaluation</u>												
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Management</u>												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			0.000	0.000		0.000		18.357		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY

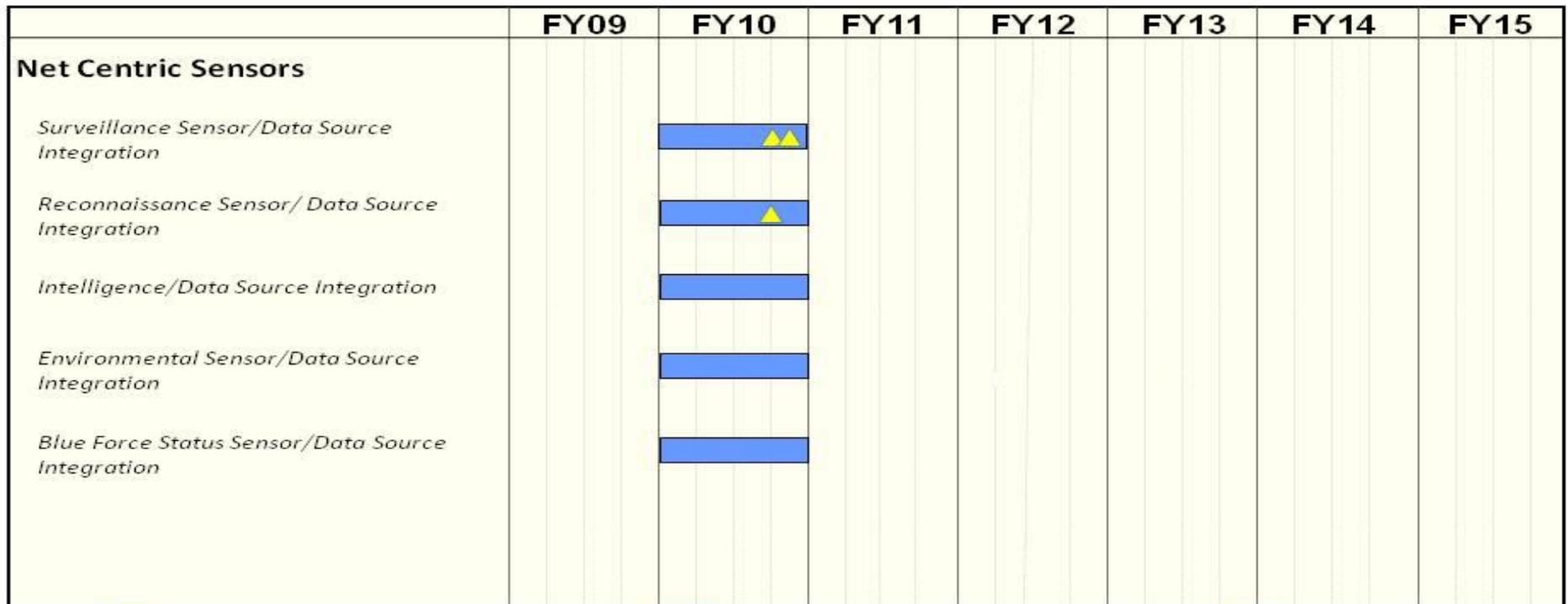
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A012 Net-centric Sensors and Data Sources



- Concept activities / Risk Reduction
- Design / development / Integration
- Operational test
- Sensor & Data Source Service (plan to be approved)
- Sensor & Data Source Service (plan approved)
- Key events

Exhibit R-4a, RDT&E Schedule Detail

DATE

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A012 Net-centric Sensors and Data Sources

(U) Schedule Profile

FY 2008

FY 2009

FY 2010

(U) Surveillance Sensor/Data Source Exposed

4Q

(U) Reconnaissance Sensor/Data Source Exposed

4Q

Exhibit R-2a, RDT&E Project Justification

DATE
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)					PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems			PROJECT NUMBER AND TITLE A037 Space Surveillance Telescope		
Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A037 Space Surveillance Telescope	0.000	0.000	6.895	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

Space Surveillance Telescope, 65A037, is a new project in FY10.

(U) A. Mission Description and Budget Item Justification

The Space Surveillance Telescope (SST) is a Defense Advanced Research Projects Agency (DARPA) development program intended to improve US space surveillance capabilities to find, fix, track and characterize small objects in Deep Space (DS) to a level that will address warfighter requirements. SST is a ground based, electro-optical telescope that will demonstrate technologies in curved, charge coupled device (CCD) development as well as large telescope control methods. This effort transitions the SST into normalized Air Force operations in support of SSA. In particular, SST provides a capability for uncued detection and tracking of small satellite objects in all deep space orbits. This is a new start in FY10.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) Space Surveillance Telescope Transition to Operations	0.000	0.000	6.895
(U)			
(U)			
(U) Total Cost	0.000	0.000	6.895

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) N/A										

(U) D. Acquisition Strategy

Following the DARPA/MIT-LL demonstration period (est to complete third quarter FY10), AFSPC will oversee a 12-18 month transition period in which the CONOPs for SST will be completed. Several tactics, techniques and procedures (TTPs) will be considered to determine the maximum benefit SST can provide to achieving Space Situation Awareness. Preliminary transition activities such as obtaining critical spares and completing the net-centric infrastructure will begin in FY10 prior to IOC. After the completion of a positive Joint Military Utility Assessment (JMUA) decision in FY11, sustainment of the operationalized SST capabilities will follow.

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Exhibit R-3, RDT&E Project Cost Analysis

DATE

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BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems				A037 Space Surveillance Telescope			

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> Space Surveillance Telescope Transition	TBD	MIT Lincoln Laboratory, Lexington, MA	0.000	0.000		0.000		4.334	Oct-09	0.000	4.334	
Space Surveillance Telescope Data Delivery	C/CPAF	ITT Corporation, Colorado Springs, CO	0.000	0.000		0.000		1.870	Oct-09	0.000	1.870	
Subtotal Product Development			0.000	0.000		0.000		6.204		0.000	6.204	0.000
Remarks:												
(U) <u>Support</u> Program Office Support	Various	Electronic Systems Center, Peterson AFB, CO	0.000	0.000		0.000		0.691	Oct-09	0.000	0.691	
Subtotal Support			0.000	0.000		0.000		0.691		0.000	0.691	0.000
Remarks:												
(U) <u>Test & Evaluation</u>												0.000
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Management</u>												0.000
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U)												0.000
Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			0.000	0.000		0.000		6.895		0.000	6.895	0.000

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE
A037 Space Surveillance Telescope

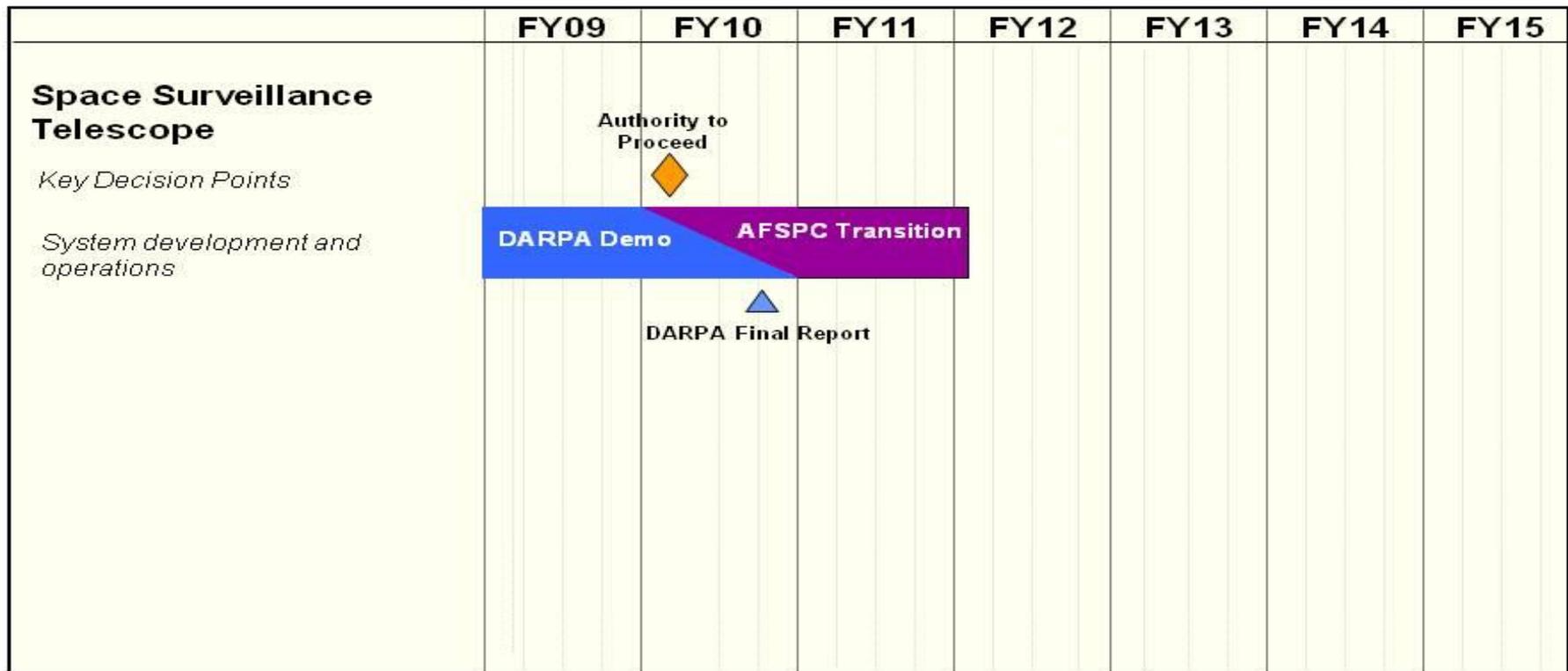


Exhibit R-4a, RDT&E Schedule Detail

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A037 Space Surveillance Telescope

(U) Schedule Profile

FY 2008

FY 2009

FY 2010

(U) Authority to proceed

1Q

Exhibit R-2a, RDT&E Project Justification	DATE May 2009
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BUDGET ACTIVITY 05 System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604425F Space Situation Awareness Systems	PROJECT NUMBER AND TITLE A038 SSA Environmental Monitoring
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Cost (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A038 SSA Environmental Monitoring	0.000	0.000	15.550	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

Space Situation Awareness Environmental Monitoring (SSAEM), 65A038, is a new project in FY10.

(U) A. Mission Description and Budget Item Justification

Space Situational Awareness Environmental Monitoring (SSAEM) continues the key legacy space environment measurements of the DMSP program de-manifested from the planned next generation weather program. These measurements are critical inputs to the nation's space environment analysis and forecasting models supporting the pervasive nature of space environmental support to all aspects of SSA, offensive and defensive space control, system anomaly resolution, attribution and responsive actions, and force protection from communication outages modulated by solar activity. The key components of SSAEM include a space-based sensing capability to acquire space environment measurement data, ground processing software to generate required products and development/modifications of environmental models/databases and application algorithms to assimilate the SSAEM sensor data. SSAEM will support risk reduction for space sensors by leveraging funding on prototypes, operational systems and Joint/Advanced Concept Technology Demonstration (JCTDs/ACTDs). SSAEM will seamlessly integrate into the overall SSA mission, comply with net-centricity requirements, and provide timely critical decision making data to the SSA battlespace management infrastructure. This will be a new start in FY10.

(U) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(U) SSA Environmental Monitoring sensors			5.631
(U) Data development of SSA Environmental Monitoring			7.091
(U) Program Office and related support activities, such as Technical Studies & Analysis, Systems Engineering & Integration			2.828
(U) Total Cost	0.000	0.000	15.550

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) None										

(U) D. Acquisition Strategy

The space environment measurement data sources will be acquired through competitive awards of contracts. Studies will be conducted to determine the optimum concept to acquire environment measurement data sources. Existing sensors with Technology Readiness Level (TRL) 7 or higher will be leveraged. Hosting sensors on rides of opportunity shall be a priority, however other concepts shall be considered also.

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Exhibit R-3, RDT&E Project Cost Analysis

DATE

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE			
05 System Development and Demonstration (SDD)				0604425F Space Situation Awareness Systems					A038 SSA Environmental Monitoring			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2008 Cost</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>FY 2010 Cost</u>	<u>FY 2010 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
SSA Environmental Monitoring Sensors	TBD							5.631	Jun-10	Continuing	TBD	
SSA Environmental Monitoring Data Development	TBD							7.091		Continuing	TBD	
Subtotal Product Development			0.000	0.000		0.000		12.722		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u>												
Program Management								2.828		Continuing	TBD	
Subtotal Support			0.000	0.000		0.000		2.828		Continuing	TBD	0.000
Remarks:												
(U) <u>Test & Evaluation</u>												
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Management</u>												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			0.000	0.000		0.000		15.550		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

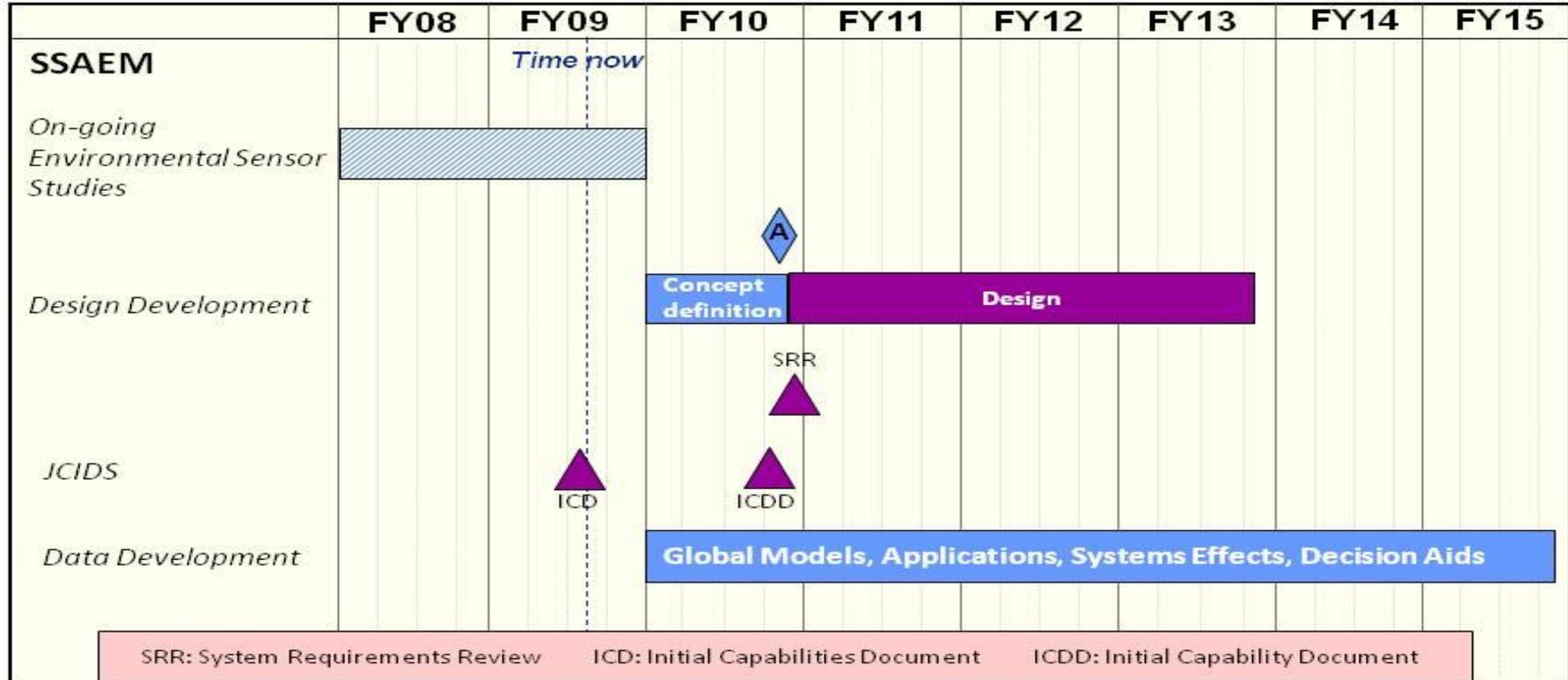
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BUDGET ACTIVITY
05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE
A038 SSA Environmental Monitoring



- Concept activities
- Design / development
- Integration / test
- Production / fielding
- Operations / sustainment
- Key events

Exhibit R-4a, RDT&E Schedule Detail

DATE

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BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604425F Space Situation Awareness Systems

PROJECT NUMBER AND TITLE

A038 SSA Environmental Monitoring

(U) Schedule Profile

FY 2008

FY 2009

FY 2010

(U) Milestone A

4Q

(U) Systems Requirements Review

4Q