

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>February 2007</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305940F Space Situation Awareness Operations</b>
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	0.000	31.282	23.980	16.405	0.000	0.000	0.000	0.000	0.000	71.667
A017 Sensor Service Life Extension Programs	0.000	31.282	23.980	16.405	0.000	0.000	0.000	0.000	0.000	71.667

In FY 2007 this project transferred from PE 0305910F, Spacetrack, to reflect evolution of space surveillance to the new Space Situation Awareness construct.

**(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, it 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 fields, upgrades, operates, and sustains Air Force sensors and information integration capabilities within the SSA network while companion program element 0604425F, Space Situation Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element focus on surveillance of objects in Earth orbit to aid tasks including satellite tracking; space object identification, tracking, and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

The Sensor Service Life Extension Programs (SLEPs) project funds efforts to upgrade and extend the lifetimes of operational Space Situation Awareness (SSA) sensors. The first of these, the Eglin SLEP, extends the lifetime of the one-of-a-kind AN/FPS-85 phased array radar at Eglin Air Force Base, Florida, dedicated to finding and tracking near Earth and deep space objects. Operational since 1968, this radar is the SSA network's largest tracker of objects in the manned flight region, and it tracks over half the objects in the Air Force space object catalog. The SLEP effort replaces aging, increasingly unsupportable radar components.

The second effort in this project, the Haystack Ultra-wideband Satellite Imaging Radar, upgrades the X-band Haystack radar at the Lincoln Space Surveillance Complex in Westford, Massachusetts. Haystack provides radar imagery, space object identification, and metric data to the Air Force to aid SSA operations. The upgrade effort builds a W-band high-power transmitter enabling object imaging with resolution significantly greater than that of the X-band system; it also replaces the existing antenna and processing equipment with more modern hardware and software compatible with W-band operations. The resulting architecture will enable seamless W- and X-band operations as well as easier switching between X-band space surveillance and radio astronomy activities. Greater radar resolution is necessary to maintain current levels of space object characterization since satellites are becoming smaller than ever, making X-band characterization of them increasingly difficult.

Both these efforts are in Budget Activity 7, Operational System Development, because they develop modifications for operational SSA sensors.

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0305940F Space Situation Awareness Operations

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

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	0.000	31.401	10.778	0.505
(U) Current PBR/President's Budget	0.000	31.282	23.980	16.405
(U) Total Adjustments	0.000	-0.119		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.119		
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				

(U) **Significant Program Changes:**

FY 2008 - FY 2009: Adjustments to fund Haystack radar antenna cost growth and to restructure Eglin SLEP funding in order to conduct a partial SLEP only

## Exhibit R-2a, RDT&amp;E Project Justification

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0305940F Space Situation Awareness Operations				PROJECT NUMBER AND TITLE A017 Sensor Service Life Extension Programs			
Cost (\$ in Millions)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total	
A017 Sensor Service Life Extension Programs	0.000	31.282	23.980	16.405	0.000	0.000	0.000	0.000	0.000	71.667	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0			

In FY 2007 this project transferred from Project 67A008, Sensor Service Life Extension Programs, in PE 0305910F, Spacetrack, to reflect the evolution of space surveillance to the Space Situation Awareness construct. The full FY 2006 - FY 2013 schedule for this project is included here for clarity, but refer to the RDT&E Budget Item Justification for that PE for further information on funding and activities prior to FY 2007.

(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, it 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 fields, upgrades, operates, and sustains Air Force sensors and information integration capabilities within the SSA network while companion program element 0604425F, Space Situation Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element focus on surveillance of objects in Earth orbit to aid tasks including satellite tracking; space object identification, tracking, and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

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(U) <b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Eglin radar life extension engineering design, development, and support	0.000	17.706	15.121	15.696
(U) Haystack radar upgrade engineering design, development, and support	0.000	13.576	8.859	0.709
(U) Total Cost	0.000	31.282	23.980	16.405

(U) <b><u>C. Other Program Funding Summary (\$ in Millions)</u></b>	<u>FY 2006</u>	<u>FY 2007</u>	<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>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) RDT&E, Air Force (PE 0305190F, Spacetrack)	34.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	86.111

(U) **D. Acquisition Strategy**

The acquisition strategy for the Eglin SLEP effort was re-examined due to program cost growth. Instead of completing the full SLEP originally envisioned, the effort will now only conduct a partial SLEP replacing key items. This program utilizes an option on the System Engineering, Sustainment, and Modernization (SENSOR) contract competitively awarded to ITT Industries for sustaining and upgrading various Air Force radars, including the Eglin radar, in February 2002.

The Massachusetts Institute of Technology's Lincoln Laboratory (MIT/LL), a non-profit Federally-Funded Research & Development Center, performs the Haystack upgrade effort under a master contract with the Electronics System Center. This effort is classified as applied research under that contract. MIT/LL transferred ownership of the radar to the Air Force but continues to operate it as part of its Lincoln Space Surveillance Complex per contract with the Air Force.

UNCLASSIFIED

**Exhibit R-3, RDT&E Project Cost Analysis**

DATE  
**February 2007**

BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT NUMBER AND TITLE				
<b>07 Operational System Development</b>				<b>0305940F Space Situation Awareness Operations</b>						<b>A017 Sensor Service Life Extension Programs</b>				
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior to FY 2006 Cost</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>														
Eglin architecture development and life extension	C/CPAF	ITT Industries, Colorado Springs, CO	0.000	0.000		15.146	Nov-06	12.448	Nov-07	12.879	Nov-08	0.000	40.473	
Haystack radar upgrade design and build	SS/FP-LOE	MIT Lincoln Laboratory, Lexington, MA	0.000	0.000		12.531	Oct-06	8.101	Oct-07	0.588	Oct-08	0.000	21.220	
Subtotal Product Development			0.000	0.000		27.677		20.549		13.467		0.000	61.693	0.000
Remarks:														
(U) <u>Support</u>														
Development review and management	C/FP-LOE	L-3 Titan, Billerica, MA	0.000	0.000		1.966	Nov-06	2.436	Nov-07	1.805	Nov-08	0.000	6.207	
Development review and management	Various	Electronic Systems Center, Hanscom AFB, MA	0.000	0.000		1.639	Nov-06	0.995	Nov-07	1.133	Nov-08	0.000	3.767	
Subtotal Support			0.000	0.000		3.605		3.431		2.938		0.000	9.974	0.000
Remarks:														
(U) <u>Test &amp; Evaluation</u>														
Not applicable													0.000	
Subtotal Test & Evaluation			0.000	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	0.000
Remarks:														
(U) Total Cost			0.000	0.000		31.282		23.980		16.405		0.000	71.667	0.000

Exhibit R-4, RDT&E Schedule Profile

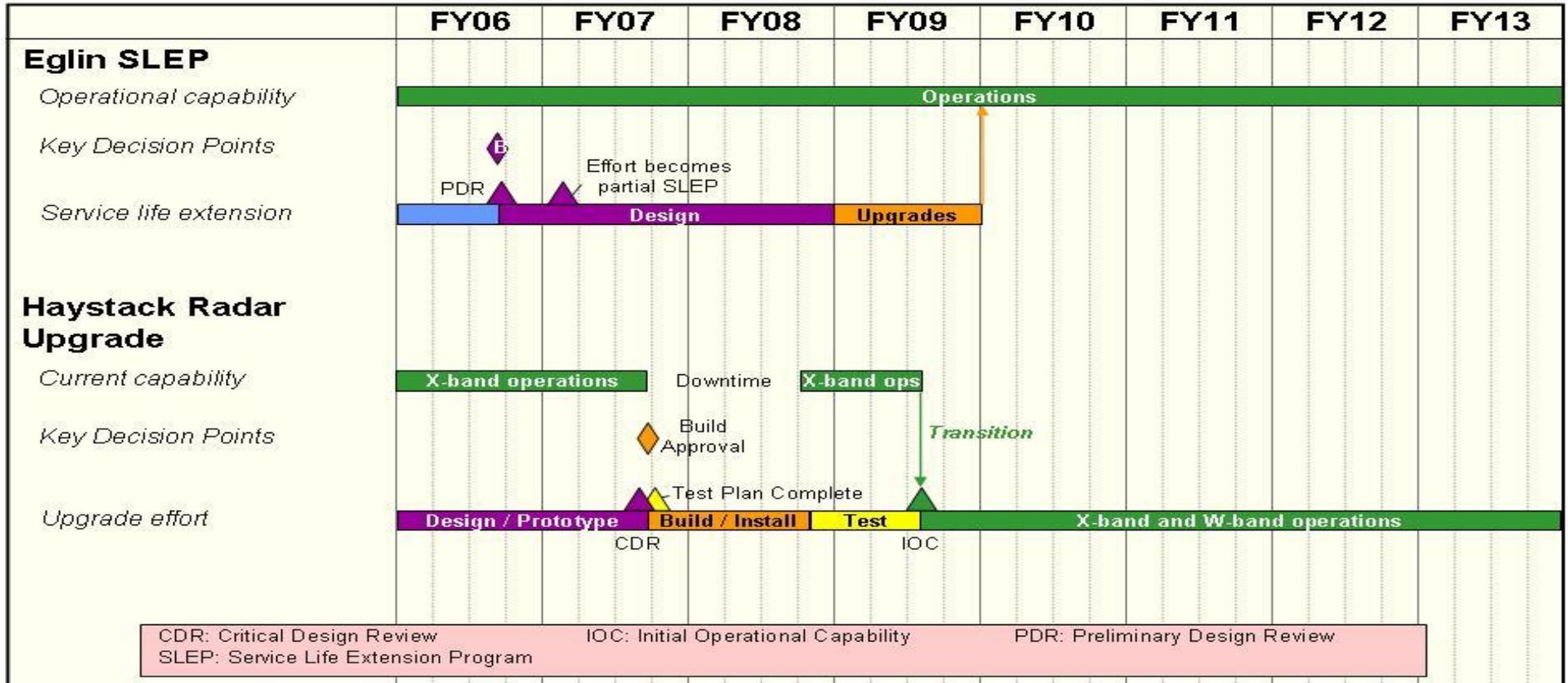
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07 Operational System Development

PE NUMBER AND TITLE  
0305940F Space Situation Awareness Operations

PROJECT NUMBER AND TITLE  
A017 Sensor Service Life Extension Programs



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

Exhibit R-4a, RDT&E Schedule Detail

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07 Operational System Development

PE NUMBER AND TITLE

0305940F Space Situation Awareness Operations

PROJECT NUMBER AND TITLE

A017 Sensor Service Life Extension Programs

(U) **Schedule Profile**

- (U) Eglin life extension modifications and upgrades
- (U) Haystack upgrade Critical Design Review
- (U) Haystack upgrade Build Approval decision
- (U) Haystack transition to dual-band operations

FY 2006

FY 2007

FY 2008

FY 2009

1-4Q

3Q

3Q

3Q