

PE NUMBER: 0305910F  
PE TITLE: SPACETRACK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE <b>February 2003</b>	
BUDGET ACTIVITY <b>07 - Operational System Development</b>					PE NUMBER AND TITLE <b>0305910F SPACETRACK</b>					
COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21,935	21,507	118,234	162,262	151,248	214,014	402,617	429,703	Continuing	TBD
4279 Have Stare Radar	8,470	0	0	0	0	0	0	0	0	131,273
4791 GEODSS Sustainment	3,149	0	0	0	0	0	0	0	0	10,031
4930 Space Based Space Surveillance	2,008	9,810	78,959	109,519	84,731	115,605	196,181	204,870	Continuing	TBD
5011 Space Situational Awareness Initiatives	8,308	11,697	15,479	12,118	16,266	10,938	9,312	7,581	Continuing	TBD
A008 Sensor Service Life Extension Programs (Sensor SLEPs)	0	0	19,867	31,761	25,467	30,001	9,697	0	0	116,793
A009 Orbital Deep Space Imager (ODSI)	0	0	3,929	8,864	24,784	57,470	187,427	217,252	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0
<p>FY03: Project 5011, Space Situational Awareness Initiatives, was changed from Project 5010 (same name) to correct an administrative error. This action did not change program content.</p> <p>FY04: Project A008, Sensor Service Life Extension Programs (Sensor SLEPs), efforts were transferred from Project 5011, Space Situational Awareness Initiatives (this PE), in order to ensure positive tracking for the SLEP work.</p> <p>FY04: Project A009, Orbital Deep Space Imager (ODSI), activities were transferred from Project 5011, Space Situational Awareness Initiatives (this PE), in order to ensure positive tracking for the ODSI work. ODSI is a new start this year.</p>										

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**0305910F SPACETRACK****(U) A. Mission Description**

The SPACETRACK program element represents a worldwide Space Surveillance Network (SSN) of dedicated, collateral, and contributing electro-optical, passive radio frequency (RF) and radar sensors. The SSN is tasked to provide space object identification and cataloging, satellite attack warning, timely notification to U.S. forces of satellite fly-over, space treaty monitoring, and scientific and technical intelligence gathering. The continued increase in satellite and orbital debris populations, as well as the increasing diversity in launch trajectories, non-standard orbits, and geosynchronous altitudes, necessitates continued modernization of the SSN to meet existing and future requirements and ensure their cost-effective supportability.

The HAVE STARE radar is a high resolution X-band tracking and imaging radar with a 27 meter mechanical dish antenna. The system was sited at Vardo, Norway, as a dedicated space surveillance sensor to support the mission of space object catalog maintenance and mission payload assessment. The project is complete as of the end of FY02.

The Ground-Based Electro Optical Deep Space Surveillance (GEODSS) Sustainment project developed and now fields ten Charge-Coupled Device (CCD) sensors for the GEODSS System, located at Socorro, NM; Diego Garcia, Indian Ocean; and Maui, Hawaii. In addition, this project funds the purchase and integration of ten Modular Precision Angular Control Systems (MPACS), as well as sensor controller hardware and associated software.

The Space Based Space Surveillance (SBSS) project is an effort to acquire a constellation of satellites to conduct space surveillance. A constellation of space-based space surveillance satellites will provide timely space situational awareness to meet future space control operations. The SBSS is a follow-on to a successful Advanced Concept Technology Demonstration (ACTD) of the Mid-Course Space Experiment/Space Based Visible (MSX/SBV) sensor.

The Space Situational Awareness (SSA) initiatives are a collection of linked development efforts to accelerate the evolution of the Space Surveillance Network (SSN) and its command and control (C2) infrastructure into a more capable Air Force SSA Operational Architecture to build and disseminate the Space Common Operational Picture (Space COP) to the warfighter. SSA is the critical, enabling mission element supporting the Offensive Counterspace and Defensive Counterspace missions within Space Control.

The SPACETRACK sensor Service Life Extension Programs (SLEPs) extend the life and upgrade the hardware and software to improve system operability and sustainability of space object identification and imaging mission of US Strategic Command at the Eglin and Haystack radar systems.

The Navy Space Surveillance Fence is a dedicated sensor scheduled to be transferred from the Navy to the Air Force in FY04 that can detect earth orbiting objects out to 15,000 nautical miles (Project A008, Sensor Service Life Extension Programs).

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**0305910F SPACETRACK**(U) **A. Mission Description Continued**

The primary mission of the Orbital Deep Space Imager (ODSI) is to conduct Space Object Identification (SOI) providing high-resolution imagery of other geosynchronous satellites and near-real time, routine imagery in support of overall battle space awareness and Defensive Counterspace operations.

(U) **B. Budget Activity Justification**

All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modifications to operational sensor network sites.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Total Cost</u>
(U) Previous President's Budget	23,289	21,917	66,632	TBD
(U) Appropriated Value	23,691	21,917		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-402	-316		
b. Small Business Innovative Research	-1,256			
c. Omnibus or Other Above Threshold Reprogram		-94		
d. Below Threshold Reprogram				
e. Rescissions	-98			
(U) Adjustments to Budget Years Since FY 2003 PBR			51,602	
(U) Current Budget Submit/FY 2004 PBR	21,935	21,507	118,234	TBD

(U) **Significant Program Changes:**

1. FY04: Project A008, Sensor Service Life Extension Programs (Sensor SLEPs) efforts were transferred from Project 5011, Space Situational Awareness Initiatives (this PE).
2. FY04: Project A009, Orbital Deep Space Imager (ODSI), activities were transferred from Project 5011, Space Situational Awareness Initiatives (this PE).
3. FY04: Funding was added by OSD to accelerate the first Space Based Space Surveillance launch from FY08 to FY06.
4. FY04: OSD directed transfer of Navy Fence (PE 35927N) to Air Force (PE 35910F) starting in FY04 (\$1M).

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PROJECT

4279

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4279 Have Stare Radar	8,470	0	0	0	0	0	0	0	0	131,273

(U) **A. Mission Description**

The HAVE STARE radar (FPS-129) was transferred from the intelligence budget in FY93 at the direction of Congress. The Air Force has identified a requirement for the HAVE STARE system and has programmed funding in this program element to complete development and to deploy the system. The radar is a high resolution X-band tracking and imaging radar with a 27 meter mechanical dish antenna. The system has been sited at Vardø, Norway, as a dedicated space surveillance sensor to support the mission of space object catalog maintenance and mission payload assessment. System integration and checkout was completed in FY01. Formal system testing and evaluation were completed in May 02. The system is now providing daily operational data to Air Force Space Command (AFSPC). Documentation for approval of Initial Operational Capability (IOC) is in coordination and approval is anticipated in the second quarter of FY03.

All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modification to operational sensor network sites.

(U) **FY 2002 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$7,720 Completed formal test and evaluation  
 (U) \$750 Completed logistics tasks  
 (U) \$8,470 Total

(U) **FY 2003 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$0 Complete residual tasks with FY02 funds  
 (U) \$0 Total

(U) **FY 2004 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$0 No Activity  
 (U) \$0 Total

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(U) **B. Project Change Summary**

FY02: \$2.5M reprogrammed from GEODDS Sustainment (Project 674791) to correct system deficiencies and complete project.

FY03: System Initial Operational Capability slipped to second quarter of FY03 due to correcting deficiencies identified during Force Development Evaluation (FDE).

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

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	

(U) None

(U) **D. Acquisition Strategy**

The existing contract with Raytheon was modified Jul 02 to extend the period of performance to Apr 03 in order to complete residual system activation tasks and to deliver remaining logistics spares and technical documentation. No FY03/FY04 funds are requested.

(U) **E. Schedule Profile**

	<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4

(U) Formal System Testing Completed

(U) System Operational Acceptance

(U) System Initial Operational Capability

\* = Complete event

X = Planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT	
07 - Operational System Development					0305910F SPACETRACK				4279	
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>										
					<u>FY 2002</u>		<u>FY 2003</u>		<u>FY 2004</u>	
(U) Site preparation and support					1,400		0		0	
(U) Formal system testing					4,139		0		0	
(U) Complete open development and testing items					2,500		0		0	
(U) SPO support					431		0		0	
(U) Total					8,470		0		0	
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U) <u>Performing Organizations:</u>										
<u>Contractor or</u>		<u>Contract</u>								
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
Raytheon Elec Sys	C/CPIF/AF	Various	81,000	81,000	76,878	4,191	0	0	0	81,069
ITT Industries	PR	Sep 02	1,416	1,416	0	1,416	0	0	0	1,416
Site Support	Various	Various	N/A	N/A	25,800	1,400	0	0	0	27,200
Other PY Organizations	Various	Various	N/A	N/A	2,774	0	0	0	0	2,774
Misc	Various	Various	N/A	N/A	1,248	85	0	0	0	1,333
Prior years data reflects costs since FY94										
<u>Support and Management Organizations</u>										
MITRE	SS/PR	Various	N/A	N/A	5,551	150	0	0	0	5,701
A&AS	C/PR	Various	N/A	N/A	8,413	614	0	0	0	9,027
Lincoln Lab	SS/PR	Various	N/A	N/A	656	58	0	0	0	714
Program Office	Various	Various	N/A	N/A	1,247	436	0	0	0	1,683
Misc	Various	Various	N/A	N/A	236	120	0	0	0	356
Prior years data reflects costs since FY94										
<u>Test and Evaluation Organizations</u>										
None										
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(U) Government Furnished Property:

<u>Item</u>	<u>Contract</u> <u>Method/Type</u> <u>or Funding</u>	<u>Award or</u> <u>Obligation</u>	<u>Delivery</u> <u>Date</u>	<u>Total Prior</u> <u>to FY 2002</u>	<u>Budget</u> <u>FY 2002</u>	<u>Budget</u> <u>FY 2003</u>	<u>Budget</u> <u>FY 2004</u>	<u>Budget to</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
<u>Product Development Property</u>									
None									
<u>Support and Management Property</u>									
None									
<u>Test and Evaluation Property</u>									
None									
				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>				<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				106,700	7,092	0	0	0	113,792
Subtotal Support and Management				16,103	1,378	0	0	0	17,481
Subtotal Test and Evaluation									
Total Project				122,803	8,470	0	0	0	131,273
Prior years data reflects costs since FY94									

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**07 - Operational System Development**

PE NUMBER AND TITLE

**0305910F SPACETRACK**

PROJECT

**4791**

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4791 GEODSS Sustainment	3,149	0	0	0	0	0	0	0	0	10,031

(U) **A. Mission Description**

The GEODSS Sustainment project began in FY00 to develop and field ten Charge-Coupled Device (CCD) sensors for the Ground-Based Electro-Optical Deep Space Surveillance (GEODSS) System, located at Socorro, NM; Diego Garcia, Indian Ocean; and Maui, Hawaii. The project includes associated software changes to the Optical, Command, Control & Communications (OC3F) at Edwards AFB, CA. In addition, this project purchases and integrates ten replacement Modular Precision Angular Control Systems (MPACS), and funds associated logistics requirements, technical data and training. The project develops the first components and installs them at the test unit at Yoder, CO. Follow-on CCD cameras and MPACS will be produced and installed using Space Track Modification funds (BP83). This project, with the completed GEODSS Modification Program, will result in more than double the throughput and search rate of the legacy system. Without CCD camera replacement, the entire GEODSS system will be unusable in the FY05 time-frame, as mission critical Ebsicon tubes are no longer manufactured or supported by any vendor and the current supply of spares will run out by the end of 2004. This would result in loss of geosynchronous space situational awareness and less ability to assess the space order of battle of a potential aggressor.

All of these projects are Budget 7, Operational Systems Development, because they involve development of or modifications to operational sensor network sites.

(U) **FY 2002 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$1,649 Contingency & closeout efforts on development contractor  
 (U) \$1,500 Completed prototype camera and testing  
 (U) \$3,149 Total

(U) **FY 2003 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$0 No Activity - RDT&E efforts completed in FY02  
 (U) \$0 Total

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**4791**(U) **A. Mission Description Continued**(U) **FY 2004 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program

(U) \$0 No Activity

(U) \$0 Total

(U) **B. Project Change Summary**

FY02: \$2.5M reprogrammed to HAVE STARE (Project 674279).

FY03: GEODSS project slipped due to unforeseen technical problems associated with the production process of the Charge-Coupled Device (CCD).

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

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other APPN									0	0
(U) OPAF (PE 0305910F, Space Mods Space, P-1 Line Item #67, BA 3)*	8,702	2,406	5,069	0	0	0	0	0		16,177
(U) OPAF (PE 0305910F, Spares and Repair Parts,P-1 Line Item #106, BA 5)*	27	4,159	1,993	220	0	0	0	0	0	6,399

\* For the GEODSS Sustainment project only

(U) **D. Acquisition Strategy**

The contract for the GEODSS Sustainment project was awarded after full and open competition

(U) **E. Schedule Profile**

	<u>FY 2002</u>					<u>FY 2003</u>					<u>FY 2004</u>				
	1	2	3	4	1	2	3	4	1	2	3	4			
(U) First Article CCD Delivery						X									
(U) First Article Test (Yoder Test Site) (funded with OPAF)								X							
(U) First Article Kit Acceptance (Site 1, Socorro NM) (funded with OPAF)									X						

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(U) E. Schedule Profile Continued

	<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) GEODSS System Acceptance (All 3 Sites) (funded with OPAF)											X	

\* = Complete event

X = Planned event

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<b>07 - Operational System Development</b>					<b>0305910F SPACETRACK</b>			<b>4791</b>			
(U) <b><u>A. Project Cost Breakdown (\$ in Thousands)</u></b>											
						<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>			
(U)	System Engineering					86	0	0			
(U)	Hardware Development					300	0	0			
(U)	Program Office Support					2,763	0	0			
(U)	Total					3,149	0	0			
(U) <b><u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u></b>											
(U) <b><u>Performing Organizations:</u></b>											
	<u>Contractor or Government</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2002</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget FY 2004</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Performing Activity</u>	<u>or Funding Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>											
	TRW, Inc.	SS/CPAF/PR	Mar 00	5,660	5,660	5,274	386	0	0	0	5,660
<u>Support and Management Organizations</u>											
	MITRE	SS/PR	Jan 00	1,636	1,636	700	936	0	0	0	1,636
	MIT/Lincoln Lab	SS/PR	Feb 00	365	365	365	0	0	0	0	365
	A&AS	C/PR	Mar 00	1,876	1,876	400	1,476	0	0	0	1,876
	SPO	Various	Jan 00	494	494	143	351	0	0	0	494
<u>Test and Evaluation Organizations</u>											
None											
(U) <b><u>Government Furnished Property:</u></b>											
	<u>Item</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2002</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget FY 2004</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Description</u>	<u>or Funding Vehicle</u>	<u>Date</u>	<u>Date</u>							
<u>Product Development Property</u>											
None											
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None

Test and Evaluation Property

None

	<u>Total Prior</u> <u>to FY 2002</u>	<u>Budget</u> <u>FY 2002</u>	<u>Budget</u> <u>FY 2003</u>	<u>Budget</u> <u>FY 2004</u>	<u>Budget to</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development	5,274	386	0	0	0	5,660
Subtotal Support and Management	1,608	2,763	0	0	0	4,371
Subtotal Test and Evaluation						
Total Project	6,882	3,149	0	0	0	10,031

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**0305910F SPACETRACK**

PROJECT

**4930**

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4930 Space Based Space Surveillance	2,008	9,810	78,959	109,519	84,731	115,605	196,181	204,870	Continuing	TBD

(U) **A. Mission Description**

The primary mission of Space Based Space Surveillance (SBSS) is to conduct timely detection and tracking of all man-made objects in orbit around the earth. This includes collecting, processing, and communicating satellite metric and Space Object Identification (SOI) data. The SBSS will support the attainment of Space Surveillance Key Performance Parameters (KPPs) outlined in the USSPACECOM Capstone Requirements Document (CRD) for Space Control. Additionally, this program continues with systems integration and test studies and related support activities.

All of these projects are Budget Activity 7, Operational System Development, because they involve development of or modifications to operational sensor network sites.

(U) **FY 2002 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$2,008 Initiated Analysis of Alternatives (AoA)  
 (U) \$2,008 Total

(U) **FY 2003 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$1,547 Complete AoA  
 (U) \$6,023 Conduct Concept Definition Studies  
 (U) \$2,240 Begin Pre-Acquisition preparations  
 (U) \$9,810 Total

(U) **FY 2004 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$19,740 Begin technology risk reduction activities (acceleration of end-to-end payload development stray light rejection options and radiation tolerant parts)  
 (U) \$48,954 Complete concept definition; develop costing methodologies and conduct modeling and simulation analysis of system performance and utility; conduct system engineering and architecture development; develop mission management concepts; conduct preliminary design for bus and payload; initiate software architecture development and begin test and evaluation program development

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February 2003

BUDGET ACTIVITY

**07 - Operational System Development**

PE NUMBER AND TITLE

**0305910F SPACETRACK**

PROJECT

**4930**(U) **A. Mission Description Continued**(U) **FY 2004 (\$ in Thousands) Continued**

(U) \$6,317 Begin acquisition program support (acquisition planning, schedule management, requirements development, configuration management and financial management support)

(U) \$3,948 Begin interoperability development (horizontal integration into Space Control Systems Architecture)

(U) \$78,959 Total

(U) **B. Project Change Summary**(U) **C. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	

(U) None

(U) **D. Acquisition Strategy**

The project follows an incremental acquisition path. Pre-Acquisition (Key Decision Point (KDP) B) begins in FY04 to accomplish system design and development for an FY06 launch. Contract vehicle is the Mission Area Prime Integration Contract (MAPIC).

(U) **E. Schedule Profile**

	<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4

(U) Complete objective system AoA

(U) Begin Concept Definition studies

(U) KDP B

(U) Contract award

(U) System definition review

(U) Preliminary design review

\* = Complete event

X = Planned event

\*

\*

X

X

X

X

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE February 2003	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
<b>07 - Operational System Development</b>					<b>0305910F SPACETRACK</b>					<b>4930</b>	
(U) <b><u>A. Project Cost Breakdown (\$ in Thousands)</u></b>											
						<u>FY 2002</u>		<u>FY 2003</u>		<u>FY 2004</u>	
(U)	Analysis of Alternatives (AoA)					1,864		1,310		0	
(U)	Concept Definition Studies					0		5,120		0	
(U)	Pre-Acquisition preparations					0		1,900		0	
(U)	Technology risk reduction activities					0		0		19,740	
(U)	Complete concept definition					0		0		52,902	
(U)	Program Office Support					144		1,480		6,317	
(U)	Total					2,008		9,810		78,959	
(U) <b><u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u></b>											
(U) <b><u>Performing Organizations:</u></b>											
	<u>Contractor or</u>	<u>Contract</u>									
	<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
	<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>											
	Multiple contractors	MAPIC	Feb 02	TBD	TBD	0	1,864	8,330	72,642	Continuing	TBD
<u>Support and Management Organizations</u>											
	Program Office	N/A	N/A	N/A	N/A	0	144	1,480	6,317	Continuing	TBD
<u>Test and Evaluation Organizations</u>											
	None										
(U) <b><u>Government Furnished Property:</u></b>											
		<u>Contract</u>									
		<u>Method/Type</u>	<u>Award or</u>								
	<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>											
	None										
Project 4930											
Page 15 of 31 Pages											
Exhibit R-3 (PE 0305910F)											

## UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0305910F SPACETRACK

4930

(U) Government Furnished Property Continued:Support and Management Property

None

Test and Evaluation Property

None

	<u>Total Prior</u> <u>to FY 2002</u>	<u>Budget</u> <u>FY 2002</u>	<u>Budget</u> <u>FY 2003</u>	<u>Budget</u> <u>FY 2004</u>	<u>Budget to</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development	0	1,864	8,330	72,642	TBD	TBD
Subtotal Support and Management	0	144	1,480	6,317	TBD	TBD
Subtotal Test and Evaluation						
Total Project	0	2,008	9,810	78,959	TBD	TBD



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									DATE <b>February 2003</b>		
BUDGET ACTIVITY <b>07 - Operational System Development</b>					PE NUMBER AND TITLE <b>0305910F SPACETRACK</b>					PROJECT <b>5011</b>	
COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost	
5011      Space Situational Awareness Initiatives	8,308	11,697	15,479	12,118	16,266	10,938	9,312	7,581	Continuing	TBD	
<p>FY04: Service Life Extension Programs (SLEPs) efforts were transferred from Project 5011, Space Situational Awareness Initiatives to Project A008 (Sensor SLEPs) this PE.</p> <p>FY04: Orbital Deep Space Imager (ODSI) activities were transferred from Project 5011, Space Situational Awareness Initiatives to Project A009 (ODSI) this PE.</p> <p>(U) <b><u>A. Mission Description</u></b></p> <p>Space Situation Awareness (SSA) Initiatives are a collection of efforts to accelerate the evolution of the Space Surveillance Network (SSN) into a more capable Space Situation Awareness Network (SSAN). The SSAN is a critical element to maintaining space control. The Space Control Broad Area Review (BAR), Space Surveillance Task Force (SSTF) commissioned by the DepSecDef, and the Space Commission have all recommended improved space situation awareness capabilities. The efforts described below address several of the recommendations from the BAR, SSTF and the Commission.</p> <p>The first effort focuses on establishing an innovative office, the Space Situation Awareness Integration Office (SSAIO), to facilitate architecture development, investment planning, requirements allocation, and systems integration of SSA across DoD and other USG organizations/agencies. Deliverables for this effort include DoD Architecture compliant operational and system views focused on the short and mid-term SSA architecture. This effort is fully coordinated with the National Security Space Architecture (NSSA) office and implements the NSSA Space Situation Awareness roadmap.</p> <p>The second effort, SSA Command &amp; Control (C2), funds the incremental development of improved C2 and data fusion capabilities (leveraging the spiral development efforts of the Integrated Space C2 architecture).</p> <p>The third effort involves augmenting deep space surveillance capability by deploying remotely operated small aperture (commercially available or government-owned) telescopes. This program was cancelled due to security and operational concerns with concept of operations of geographically dispersed and unmanned overseas ground stations.</p> <p>The fourth effort involves continuing Concept and Technology Development for sensor Service Life Extension Programs (SLEPs) of critical existing legacy systems. The SPACETRACK Sensor SLEPs extend the life and upgrade the hardware and software to improve system operability and sustainability of the space object identification and imaging mission of US Space Command at the Eglin and Haystack radars.</p> <p>All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modifications to operational sensor network</p>											
Project 5011		Page 17 of 31 Pages					Exhibit R-2A (PE 0305910F)				

## UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)</b>		DATE <b>February 2003</b>																																										
<b>BUDGET ACTIVITY</b> <b>07 - Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305910F SPACETRACK</b>	<b>PROJECT</b> <b>5011</b>																																										
<p>(U) <b><u>A. Mission Description Continued</u></b> sites.</p> <p>(U) <b><u>FY 2002 (\$ in Thousands)</u></b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">(U) \$0</td> <td>Accomplishments/planned program</td> </tr> <tr> <td>(U) \$2,457</td> <td>SSAIO stand-up and initial operations in Colorado Springs</td> </tr> <tr> <td>(U) \$3,348</td> <td>SSA C2: Began space surveillance analysis tool improvements and SSN tracking/capacity studies</td> </tr> <tr> <td>(U) \$2,503</td> <td>Deep space surveillance augmentation - System Development</td> </tr> <tr> <td>(U) \$8,308</td> <td>Total</td> </tr> </table> <p>(U) <b><u>FY 2003 (\$ in Thousands)</u></b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">(U) \$0</td> <td>Accomplishments/planned program</td> </tr> <tr> <td>(U) \$1,500</td> <td>Provide R&amp;D support to Air Force Space Command funded SSAIO activities to include Space Surveillance Network Analysis Model (SSNAM) as required</td> </tr> <tr> <td>(U) \$5,485</td> <td>SSA C2: Continue space surveillance analysis tool and SSN tracking/capacity improvements</td> </tr> <tr> <td>(U) \$1,100</td> <td>Continue System Development of deep space surveillance augmentation</td> </tr> <tr> <td>(U) \$2,012</td> <td>Begin Haystack Service Life Extension Program (SLEP) system design and engineering</td> </tr> <tr> <td>(U) \$1,600</td> <td>Eglin SLEP engineering trade-off analysis and detailed technical proposal</td> </tr> <tr> <td>(U) \$11,697</td> <td>Total</td> </tr> </table> <p>(U) <b><u>FY 2004 (\$ in Thousands)</u></b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">(U) \$0</td> <td>Accomplishments/planned program</td> </tr> <tr> <td>(U) \$0</td> <td>Deep space surveillance augmentation cancelled</td> </tr> <tr> <td>(U) \$1,500</td> <td>SSAIO: Provide R&amp;D support for modeling, simulation, and analyses to include Space Surveillance Network Analysis Model (SSNAM) as required</td> </tr> <tr> <td>(U) \$2,800</td> <td>SSA C2: Data fusion tools</td> </tr> <tr> <td>(U) \$2,300</td> <td>SSA C2: Satellite position accuracy upgrades</td> </tr> <tr> <td>(U) \$5,265</td> <td>SSA C2: Data processing and timeliness enhancements</td> </tr> <tr> <td>(U) \$2,300</td> <td>SSA C2: New sensor integration</td> </tr> <tr> <td>(U) \$1,314</td> <td>SSA C2: Streamline data dissemination</td> </tr> <tr> <td>(U) \$15,479</td> <td>Total</td> </tr> </table>			(U) \$0	Accomplishments/planned program	(U) \$2,457	SSAIO stand-up and initial operations in Colorado Springs	(U) \$3,348	SSA C2: Began space surveillance analysis tool improvements and SSN tracking/capacity studies	(U) \$2,503	Deep space surveillance augmentation - System Development	(U) \$8,308	Total	(U) \$0	Accomplishments/planned program	(U) \$1,500	Provide R&D support to Air Force Space Command funded SSAIO activities to include Space Surveillance Network Analysis Model (SSNAM) as required	(U) \$5,485	SSA C2: Continue space surveillance analysis tool and SSN tracking/capacity improvements	(U) \$1,100	Continue System Development of deep space surveillance augmentation	(U) \$2,012	Begin Haystack Service Life Extension Program (SLEP) system design and engineering	(U) \$1,600	Eglin SLEP engineering trade-off analysis and detailed technical proposal	(U) \$11,697	Total	(U) \$0	Accomplishments/planned program	(U) \$0	Deep space surveillance augmentation cancelled	(U) \$1,500	SSAIO: Provide R&D support for modeling, simulation, and analyses to include Space Surveillance Network Analysis Model (SSNAM) as required	(U) \$2,800	SSA C2: Data fusion tools	(U) \$2,300	SSA C2: Satellite position accuracy upgrades	(U) \$5,265	SSA C2: Data processing and timeliness enhancements	(U) \$2,300	SSA C2: New sensor integration	(U) \$1,314	SSA C2: Streamline data dissemination	(U) \$15,479	Total
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(U) \$2,300	SSA C2: New sensor integration																																											
(U) \$1,314	SSA C2: Streamline data dissemination																																											
(U) \$15,479	Total																																											
Project 5011	Page 18 of 31 Pages	Exhibit R-2A (PE 0305910F)																																										

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2003

BUDGET ACTIVITY

**07 - Operational System Development**

PE NUMBER AND TITLE

**0305910F SPACETRACK**

PROJECT

**5011**(U) **B. Project Change Summary**(U) **C. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other APPN										
(U) OPAF (PE 0305910F, Space Mods Space, P-1 Line Item #P-67, BA3)		3,641								
(U) OPAF (PE 0305910F, Spares and Repair Parts, P-1 Line Item #P-106, BA5)		1,743								

(U) **D. Acquisition Strategy**

In FY02, the SSAIO project stood up the office in Colorado Springs, CO, began reviewing/updating FY00 SSTF results, began developing a DoD compliant short to mid-term SSA architecture, and initiated discussions with the Services and USG agencies. This effort will provide R&D support to Air Force Space Command SSAIO activities in FY03 through the use of engineering/study contracts.

SSA C2 FY02 funding began to develop capabilities for improved processing, accuracy, analysis, data fusion and dissemination of space situational data (Space COP) evolving to an integrated Air Force SSA operational architecture. The SSA C2 Concept & Technology Development continues in FY04. All development either uses the existing Integrated Space Command and Control (ISC2) contract or uses other contractors that develop capabilities that will be integrated into or easily interfaced with the operational architecture the ISC2 contract produces.

The effort to augment deep space surveillance capability began in FY02 to develop visible wavelength sensors on small aperture telescopes using sensor technology similar to the upgraded GEODSS telescopes. System Development continued in FY03; however in FY03, the Air Force cancelled all FY04 and beyond efforts.

In FY03, Concept & Technology Development for sensor Service Life Extension programs (SLEPs) begins in project 675011. The Eglin SLEP will be performed using the existing SENSOR contract with ITT Industries System Division; Colorado Springs, CO. The HAYSTACK SLEP will be performed using the ESC contract with Lincoln Laboratories; Hanscom AFB, MA.

(U) **E. Schedule Profile**FY 2002FY 2003FY 2004

Project 5011

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Exhibit R-2A (PE 0305910F)

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0305910F SPACETRACK

5011

(U) E. Schedule Profile Continued

	<u>FY 2002</u>					<u>FY 2003</u>					<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4		
(U) SSAIO - Office Standup		*												
(U) SSA C2 - Analysis tool improvements and SSN studies begin		*												
(U) Haystack system development plan								X						
(U) Eglin trade-off analysis report						X								
(U) Eglin detailed technical proposal								X						
(U) SSA C2 - Data fusion tools, Increment 1 delivery									X					
(U) SSA C2 - Satellite position accuracy upgrades, initial delivery										X				
(U) SSA C2 - Data processing and timeliness upgrades, initial delivery												X		

\* = Complete event

X = Planned event

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE February 2003		
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT	
07 - Operational System Development					0305910F SPACETRACK				5011	
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>										
							<u>FY 2002</u>		<u>FY 2003</u>	<u>FY 2004</u>
(U)	SSAIO Stand-up and initial operations in Colorado Springs						2,457		1,500	1,500
(U)	SSA C2 Concept & Technology Development						3,321		5,485	13,715
(U)	Deep space surveillance augmentation - System Development						2,464		1,045	0
(U)	Sensor SLEPs Concept & Technology Development						0		1,853	0
(U)	Sensor SLEPs System Engineering						0		1,464	0
(U)	Program Office Support						66		350	264
(U)	Total						8,308		11,697	15,479
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U) <u>Performing Organizations:</u>										
<u>Contractor or</u>	<u>Contract</u>									
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
Lockheed Martin Mission Systems	PR/Mod	Jul 02	15,000	15,000	0	2,143	2,700	8,915	Continuing	TBD
ITT Industries	PR	Sep 02	4,000	4,000	0	1	1,450	1,500	Continuing	TBD
MIT/Lincoln Laboratories	PR	Jul 02	2,000	2,000	0	1,940	1,500	665	Continuing	TBD
SI International	MIPR	Jul 02	400	400	0	60	125	200	Continuing	TBD
Titan/Sencom	PR	Jul 02	700	700	0	381	250	50	Continuing	TBD
SAIC	MIPR	Jul 02	571	571	0	435	100	20	Continuing	TBD
STA	MIPR	Jul 02	100	100	0	54	20	20	Continuing	TBD
GSA	MIPR	Jul 02	3,800	3,800	0	1,111	1,500	1,150	Continuing	TBD
MITRE	PR	Jul 02	4,000	4,000	0	1,101	1,500	1,030	Continuing	TBD
Contractors (various)	MIPR/PR	Jul 02	6,000	6,000	0	1,016	1,573	1,305	Continuing	TBD
ASSPC SETA support	PR/MIPR	N/A	750	750	0	0	350	400	Continuing	TBD
Project 5011					Page 21 of 31 Pages			Exhibit R-3 (PE 0305910F)		

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE
										February 2003
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT
07 - Operational System Development					0305910F SPACETRACK					5011
(U) <u>Performing Organizations Continued:</u>										
<u>Support and Management Organizations</u>										
MITRE	PR	Jul 02	300	300	0	0	250	40	Continuing	TBD
A&AS	PR	Jul 02	740	740	0	0	0	50	Continuing	TBD
DISA	MIPR	Jul 02	130	130	0	27	47	47	Continuing	TBD
SPO	MIPR/PR/V	Jul 02	305	305	0	39	332	87	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
None										
(U) <u>Government Furnished Property:</u>										
<u>Contract</u>										
	<u>Method/Type</u>	<u>Award or</u>								
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>										
None										
<u>Support and Management Property</u>										
None										
<u>Test and Evaluation Property</u>										
None										
					<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>					<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development					0	8,242	11,068	15,255	TBD	TBD
Subtotal Support and Management					0	66	629	224	TBD	TBD
Subtotal Test and Evaluation										
Total Project					0	8,308	11,697	15,479	TBD	TBD

Project 5011

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Exhibit R-3 (PE 0305910F)

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2003

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

0305910F SPACETRACK

PROJECT

A008

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
A008 Sensor Service Life Extension Programs (Sensor SLEPs)	0	0	19,867	31,761	25,467	30,001	9,697	0	0	116,793

FY 2004: Project 5011, Space Situational Awareness Initiatives, was changed to separate activities for ease of description and execution by transferring the Service Life Extension Project activities into Project A008, Sensor Service Life Extension Project with no change in funding.

FY 2004: Beginning this year the Navy Space Surveillance Fence (PE 35927N) will transfer from the Navy to the Air Force.

(U) **A. Mission Description**

The SpaceTrack sensor Service Life Extension Programs (SLEPs) extend the life and upgrade the hardware and software to improve system operability and sustainability of space object identification and imaging mission of US Strategic Command. FY03 activities began the concept and technology development for service life extension projects at the Eglin and Haystack radar systems. The Eglin radar is a one-of-a-kind phased array radar located at Eglin AFB, FL. The radar performs near-earth and deep-space object tracking in direct support of the US Strategic Command. The Eglin SLEP replaces unsupportable hardware and incorporates modern architecture software.

The Haystack radar is a one-of-a-kind X-band imaging radar located at Westford, MA that supports US Strategic Command with satellite images. The Haystack radar SLEP project, also known as the Haystack Ultra-wideband Satellite Imaging Radar (HUSIR), will have its antenna modified and a high power amplifier developed to operate in the W-band. This modification is required to meet Space Control capstone requirements for higher resolution imagery of orbital objects. This SLEP will also develop new antenna and signal processing hardware. The data processing hardware and software will also be modernized to meet the new space control requirements.

The Navy Space Surveillance Fence is comprised of various geographically separated CONUS based receivers (6) and transmitters (3) located across the southern United States. The Navy Space Surveillance Fence is a dedicated sensor that can detect objects in orbit around the earth out to an effective range of 15,000 nautical miles. This project is being transferred from the Navy to the Air Force at OSD direction.

All of these projects are Budget Activity 7 , Operational Systems Development, because they involve development of or modifications to operational sensor network sites.

Project A008

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2003

BUDGET ACTIVITY

**07 - Operational System Development**

PE NUMBER AND TITLE

**0305910F SPACETRACK**

PROJECT

**A008**(U) **A. Mission Description Continued**(U) FY 2002 (\$ in Thousands)

(U) \$0 Accomplishments/planned program  
 (U) \$0 No Activity  
 (U) \$0 Total

(U) FY 2003 (\$ in Thousands)

(U) \$0 Accomplishments/planned program  
 (U) \$0 Activities included in Project 5011  
 (U) \$0 Total

(U) FY 2004 (\$ in Thousands)

(U) \$0 Accomplishments/planned program  
 (U) \$2,209 Haystack engineering design and project planning  
 (U) \$16,658 Eglin SLEP engineering and software development  
 (U) \$1,000 Perform S-band upgrade study for Navy Fence  
 (U) \$19,867 Total

(U) **B. Project Change Summary**

Funding realigned in FY04 from Space Track (Project 5011), Space Situational Awareness Initiatives, to establish a separate project code.

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

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other APPN										
(U) OPAF (PE 0305910F, Space Mods Space, P-1 Line Item #P-67, BA 3)	0	0	9,553	0	0	0	0	0	Continuing	TBD

(U) **D. Acquisition Strategy**

In FY04 the SLEP projects will contract for system engineering of hardware and software architecture. The hardware and software will be developed over FY05-06 with on site system integration, installation, and checkout in FY 06-07. Formal system test and operational acceptance is planned for FY08.

Project A008

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE February 2003																																																																																														
BUDGET ACTIVITY <b>07 - Operational System Development</b>					PE NUMBER AND TITLE <b>0305910F SPACETRACK</b>					PROJECT <b>A008</b>																																																																																														
<div style="display: flex; justify-content: space-between;"> <span>(U) <b><u>E. Schedule Profile</u></b></span> </div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="4" style="text-align: center; border-bottom: 1px solid black;"><u>FY 2002</u></th> <th></th> <th colspan="4" style="text-align: center; border-bottom: 1px solid black;"><u>FY 2003</u></th> <th></th> <th colspan="4" style="text-align: center; border-bottom: 1px solid black;"><u>FY 2004</u></th> </tr> <tr> <th></th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> </tr> </thead> <tbody> <tr> <td>(U) Haystack system development plan</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">X</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Eglin trade-off analysis report</td> <td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">X</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Eglin detailed technical proposal</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">X</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Eglin system design review</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">X</td> </tr> <tr> <td>(U) S-band upgrade study for Navy Fence</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">X</td><td></td><td></td> </tr> </tbody> </table> <div style="margin-top: 10px;"> <p>* = Complete event</p> <p>X = Planned event</p> </div>													<u>FY 2002</u>					<u>FY 2003</u>					<u>FY 2004</u>					1	2	3	4	1	2	3	4	1	2	3	4	(U) Haystack system development plan								X					(U) Eglin trade-off analysis report							X						(U) Eglin detailed technical proposal								X					(U) Eglin system design review												X	(U) S-band upgrade study for Navy Fence										X		
	<u>FY 2002</u>					<u>FY 2003</u>					<u>FY 2004</u>																																																																																													
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE			PROJECT		
<b>07 - Operational System Development</b>					<b>0305910F SPACETRACK</b>			<b>A008</b>		
(U) <b><u>A. Project Cost Breakdown (\$ in Thousands)</u></b>										
						<u>FY 2002</u>		<u>FY 2003</u>		<u>FY 2004</u>
(U)	System Engineering					0		0		4,500
(U)	Hardware Development					0		0		4,209
(U)	Software Development					0		0		9,708
(U)	Program Office Support					0		0		1,450
(U)	Total					0		0		19,867
(U) <b><u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u></b>										
(U) <b><u>Performing Organizations:</u></b>										
	<u>Contractor or</u>	<u>Contract</u>								
	<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>					
	<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
	<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>
	<u>Product Development Organizations</u>									
	ITT Industries	PR	Sep 02	16,550	16,550	0	0	0	16,208	Continuing
	Lincoln Laboratories	PR	Jul 02	3,900	3,900	0	0	0	1,859	Continuing
	<u>Support and Management Organizations</u>									
	A&As					0	0	0	1,050	Continuing
	Program Office					0	0	0	750	Continuing
	<u>Test and Evaluation Organizations</u>									
	None									
(U) <b><u>Government Furnished Property:</u></b>										
		<u>Contract</u>								
		<u>Method/Type</u>	<u>Award or</u>							
	<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
	<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>
	<u>Product Development Property</u>									
	None									
Project A008						Page 26 of 31 Pages		Exhibit R-3 (PE 0305910F)		

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE February 2003			
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT		
07 - Operational System Development		0305910F SPACETRACK			A008		
(U) <u>Government Furnished Property Continued:</u>							
<u>Support and Management Property</u>							
None							
<u>Test and Evaluation Property</u>							
None							
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>							
Subtotal Product Development		0	0	0	18,067	TBD	TBD
Subtotal Support and Management		0	0	0	1,800	TBD	TBD
Subtotal Test and Evaluation							
Total Project		0	0	0	19,867	TBD	TBD

Project A008

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2003

BUDGET ACTIVITY

**07 - Operational System Development**

PE NUMBER AND TITLE

**0305910F SPACETRACK**

PROJECT

**A009**

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
A009 Orbital Deep Space Imager (ODSI)	0	0	3,929	8,864	24,784	57,470	187,427	217,252	Continuing	TBD

FY 2004: Project 5011, Space Situational Awareness Initiatives, was changed to separate activities for ease of description and execution by transferring the Orbital Deep Space Imager activities into Project A009, Orbital Deep Space Imager (ODSI), with no change in funding. ODSI is a FY04 new start.

(U) **A. Mission Description**

The primary mission of the Orbital Deep Space Imager (ODSI) is to provide high-resolution imagery of other Geosynchronous satellites and near-real time, routine imagery in support of overall battle space awareness and Defensive Counterspace operations (battle damage assessment/anomaly resolution). ODSI will support the satisfaction of timeliness and characterization requirements as outlined in the USSPACECOM Space Control Capstone Requirements Document (CRD).

All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modification to operational sensor network sites.

(U) **FY 2002 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$0 No Activity  
 (U) \$0 Total

(U) **FY 2003 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$0 No Activity  
 (U) \$0 Total

(U) **FY 2004 (\$ in Thousands)**

(U) \$0 Accomplishments/planned program  
 (U) \$3,929 Begin Concept Definition Studies (KDP A)  
 (U) \$3,929 Total

(U) **B. Project Change Summary**

FY04 new start.

Project A009

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)							DATE <b>February 2003</b>			
BUDGET ACTIVITY <b>07 - Operational System Development</b>				PE NUMBER AND TITLE <b>0305910F SPACETRACK</b>			PROJECT <b>A009</b>			
<b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>										
	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
<b>(U) AF RDT&amp;E</b>										
<b>(U) Other APPN</b>										
<b>(U) D. Acquisition Strategy</b>										
The project will begin with Key Decision Point (KDP) A declaration in early FY04. Concept Definition Activities will continue through FY05, and culminate in a FY06 KDP B (pre-Acquisition) decision. Subsequent FY06 pre-Acquisition contracts immediately follow. Acquisition and operations (KDP C) will commence in FY07 with a planned first launch in FY12.										
<b>(U) E. Schedule Profile</b>										
		<u>FY 2002</u>			<u>FY 2003</u>			<u>FY 2004</u>		
		1	2	3	4	1	2	3	4	1
<b>(U) KDP A</b>										
<b>(U) Begin Concept Definition</b>										
									X	
										X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE			PROJECT		
<b>07 - Operational System Development</b>					<b>0305910F SPACETRACK</b>			<b>A009</b>		
(U) <b><u>A. Project Cost Breakdown (\$ in Thousands)</u></b>										
					<u>FY 2002</u>				<u>FY 2003</u>	<u>FY 2004</u>
(U) Concept definition Studies (Phase A)										3,684
(U) Program Office Support										245
(U) Total										3,929
(U) <b><u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u></b>										
(U) <b><u>Performing Organizations:</u></b>										
<u>Contractor or Government</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2002</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget FY 2004</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Performing Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>										
Multiple Contractors	TBD	TBD	TBD	TBD	0	0	0	3,684	Continuing	TBD
<u>Support and Management Organizations</u>										
Program Office	N/A	N/A	N/A	TBD	0	0	0	245	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
None										
(U) <b><u>Government Furnished Property:</u></b>										
<u>Item</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2002</u>	<u>Budget FY 2002</u>	<u>Budget FY 2003</u>	<u>Budget FY 2004</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>							
<u>Product Development Property</u>										
None										
<u>Support and Management Property</u>										
None										
<u>Test and Evaluation Property</u>										
None										
Project A009					Page 30 of 31 Pages			Exhibit R-3 (PE 0305910F)		

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE February 2003	
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT
07 - Operational System Development		0305910F SPACETRACK				A009
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>
<u>Subtotals</u>						<u>Total</u>
Subtotal Product Development		0	0	0	3,684	TBD
Subtotal Support and Management		0	0	0	245	TBD
Subtotal Test and Evaluation						
Total Project		0	0	0	3,929	TBD

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