

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001	
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK					
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	58,170	2,529	32,591	6,494	9,321	18,410	21,457	107,406	Continuing	TBD
4241 Advanced Electro Optical System (AEOS)	19,438	0	0	0	0	0	0	0	0	191,189
4279 Have Stare Radar	33,005	1,374	6,000	0	0	0	0	0	0	120,503
4791 GEODSS Sustainment	5,727	1,155	5,678	0	0	0	0	0	0	12,560
4930 Space Based Space Surveillance	0	0	5,263	6,494	9,321	18,410	21,457	107,406	Continuing	TBD
5010 Space Situational Awareness Initiatives	0	0	15,650	0	0	0	0	0	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

NOTE: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional and subject to change.

1. Have Stare total cost not available since it was transferred from Intelligence budget in FY93. Total cost begins with FY94.
2. Space Based Space Surveillance is a new start with this budget submission.
3. Space Situational Awareness Initiatives is a new start with this budget submission.

(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 resources and responsibility for completing the HAVE STARE Radar System development were transferred to SPACETRACK from an intelligence program per Congressional direction in FY93.

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(U) A. Mission Description Continued

The GEODSS Sustainment project, a new effort in FY00, develops and fields ten Charge-Coupled Device (CCD) cameras for the Ground-Based Electro Optical Deep Space Surveillance (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 a new start effort in FY02 to acquire a constellation of satellites to conduct space surveillance. A constellation of space-based space surveillance satellites would provide timely space situational awareness to meet future space control operations. The SBSS is a follow-on to a successful Advanced Concept Technology Demonstration (MSX/SBV).

The Space Situational Awareness (SSA) Initiatives, a new start in FY02, are a collection of efforts to accelerate the evolution of the Space Surveillance Network (SSN) into a more capable Space Situational Awareness Network (SSAN). The SSAN is a critical element to maintaining Space Control.

(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 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2001 PBR)	54,010	2,553	583	TBD
(U) Appropriated Value	54,806	2,553		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-499	-18		
b. Small Business Innovative Research	-1,992			
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogram	6,069			
e. Rescissions	-214	-6		
(U) Adjustments to Budget Years Since FY 2001 PBR			32,008	
(U) Current Budget Submit/FY 2002 PBR	58,170	2,529	32,591	TBD

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

(U) Significant Program Changes:

1. The following net transactions are not reflected in the FY00 program total: BTR=+\$350K
2. The following net transactions are not reflected in the FY01 program total: BTR=+\$4014K, SBIR=-\$14K
3. FY00/01: BTRs include reprogramming actions for the HAVE STARE radar program to fund restructured program activities after scheduled Initial Operational Capability (IOC) date moved from 4th Qtr FY00 to 2nd Qtr FY02 (See BPAC 4279, this PE)
4. FY02: Adjustment funds Space Based Space Surveillance Concept Exploration and Concept Development - a new start in FY02 (See BPAC 674930, this PE, FY02 funding is \$5.263M). Also, the adjustment funds a new start effort in FY02 to improve Space Situational Awareness (SSA) (See BPAC 675010, this PE, FY02 funding is \$15.65M)

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305910F SPACETRACK					PROJECT 4241	
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4241 Advanced Electro Optical System (AEOS)	19,438	0	0	0	0	0	0	0	0	191,189
NOTE: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional and subject to change.										
(U) <u>A. Mission Description</u>										
The Advanced Electro-Optical System (AEOS) is a 3.67 meter telescope addition to the Maui Space Surveillance System (MSSS). The AEOS program was initiated in FY91. The Air Force Research Laboratory (AFRL) assumed management of AEOS in FY01 and the project is now funded in PE 63444F, Advanced Technology Development.										
(U) <u>FY 2000 (\$ in Thousands)</u>										
(U) \$9,379	Completed site testing, integration, and characterization of the adaptive optics system and sensors; completed procurement of spares, and transition of system from AFSPC to AFRL									
(U) \$2,685	Completed integration and test upgrade to MSSS Observatory Control System									
(U) \$7,374	Continued R&D and upgrades to MSSS (P3I items) such as AEOS/OCS enhancements to instrumentation and coude beam; continued advanced daylight imaging techniques and tool development									
(U) \$19,438	Total									
(U) <u>FY 2001 (\$ in Thousands)</u>										
(U) \$0	No Activity - RDT&E efforts complete in FY00, transferred to PE 63444F									
(U) \$0	Total									
(U) <u>FY 2002 (\$ in Thousands)</u>										
(U) \$0	No Activity - RDT&E efforts complete in FY00, transferred to PE 63444F									
(U) \$0	Total									
(U) <u>B. Project Change Summary</u>										
Observatory Control System Acceptance and AEOS Developmental Test and Evaluation (DT&E) Completion slipped from 3rd Qtr FY00 to 4th Qtr FY00 due to minor technical problems and difficulty in scheduling testing. The technical problems were corrected and AEOS DT&E was completed by 30 Sep 00.										

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305910F SPACETRACK				PROJECT 4241		
(U) C. Other Program Funding Summary (\$ in Thousands)										
	<u>FY 2000</u>	<u>FY 2001</u>	<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>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) AF RDT&E										
(U) (PE 63444F) Maui Space Surveillance Systems (BA-03, Line #29)		19,445	6,484	6,444	6,441	6,436	6,528	6,623	Continuing	TBD
Note: In FY01, AFRL assumed management of AEOS and funding appears in PE 63444F, Budget Activity 3, Advanced Technology Development										
(U) D. Acquisition Strategy										
All major contracts were awarded after full and open competition.										
(U) E. Schedule Profile										
				<u>FY 2000</u>			<u>FY 2001</u>		<u>FY 2002</u>	
				1	2	3	4	1	2	3
(U) Observatory Control Sys Acceptance							*			
(U) Adaptive Optics System Acceptance				*						
(U) AEOS DT&E Complete							*			
(U)										
* = Complete event										
X = Planned event										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE
										June 2001
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT
07 - Operational System Development					0305910F SPACETRACK					4241
(U) A. Project Cost Breakdown (\$ in Thousands)										
					<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>			
(U)	AEOS Maui facilities expansion				19,438	0	0			
(U)	Total				19,438	0	0			
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<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 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</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>										
Kiewit Pacific Co	C/FFP/AF	Aug 94	21,000	22,979	22,979	0	0	0	0	22,979
Kapolei, HI										
Contraves USA	C/FFP/AF	Dec 91	23,000	23,413	23,413	0	0	0	0	23,413
Pittsburgh, PA										
ROSI	C/CPAF/AF	Aug 94	31,000	36,962	34,362	2,179	0	0	0	36,541
Danbury, CT										
COMSAT RSI, Inc	C/FFP/AF	Aug 95	7,000	7,289	7,289	0	0	0	0	7,289
Clarksburg, MD										
Mission Research Corp	C/CPIF/AF	Jul 95	4,600	5,760	5,460	300	0	0	0	5,760
Santa Barbara, CA										
Raytheon	C/CPIF/AF	Sep 95	5,800	9,023	8,648	225	0	0	0	8,873
El Segundo, CA										
RTS	C/CPAF/AF	Sep 95	N/A	41,006	26,581	12,843	0	0	0	39,424
Kihei, Maui, HI										
RPS	C/CPAF/AF	Oct 90	N/A	41,006	12,933	0	0	0	0	12,933
Kihei, Maui, HI										
UH*	C/CR/AF	Oct 96	3,400	3,665	3,040	629	0	0	0	3,669
Maui, HI										
Project 4241					Page 6 of 26 Pages	Exhibit R-3 (PE 0305910F)				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE
BUDGET ACTIVITY										June 2001
07 - Operational System Development					PE NUMBER AND TITLE					PROJECT
					0305910F SPACETRACK					4241
(U) <u>Performing Organizations Continued:</u>										
*Congressionally directed Spectrograph Research/Atmospheric Characterization										
<u>Support and Management Organizations</u>										
Logicon RDA	C/CPAF/AF	Oct 95	N/A	N/A	2,856	288	0	0	0	3,144
Albuquerque, NM										
Logicon RDA	C/CPAF/AF	Oct 93	N/A	N/A	3,360	0	0	0	0	3,360
Albuquerque, NM										
MIT/LL	SS	Oct 93	N/A	N/A	2,816	350	0	0	0	3,166
Cambridge, MA										
S. Systems Corp	C/CPFF/AF	Jul 93	N/A	N/A	2,976	0	0	0	0	2,976
Albuquerque, NM										
ARMY COE	SS	Jan 95	N/A	N/A	1,617	0	0	0	0	1,617
Haleakala, Maui, HI										
WJS	SS	Oct 97	N/A	N/A	409	150	0	0	0	559
Albuquerque, NM										
Program Office	Various	N/A	N/A	N/A	13,012	2,474	0	0	0	15,486
<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 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</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										
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BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT
07 - Operational System Development		0305910F SPACETRACK				4241
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>
						<u>Total</u>
<u>Subtotals</u>						
Subtotal Product Development		144,705	16,176	0	0	0
Subtotal Support and Management		27,046	3,262	0	0	0
Subtotal Test and Evaluation						
Total Project		171,751	19,438	0	0	0
						191,189

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305910F SPACETRACK					PROJECT 4279	
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4279 Have Stare Radar	33,005	1,374	6,000	0	0	0	0	0	0	120,503
NOTE: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional and subject to change.										
1. Have Stare total cost not available since it was transferred from intel budget in FY93. Total cost begins with FY94.										
(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 is being deployed to Vardø, Norway, as a dedicated space surveillance sensor to support the mission of space object catalog maintenance and mission payload assessment. FY00 planned activity was restructured because of failure and loss of the radome. By Sep 00, a new radome had been installed, the electronics re-installed, and initial tracking achieved. DT&E commenced Mar 01 and is currently in process. System integration and checkout will complete in FY01. Formal system testing and evaluation will complete in FY02 and the system will be turned over for operational use to the user in 2nd Qtr FY02. The radar will not be a fully integrated element of the Missile Warning Network. The radar will only be integrated with the Space Control Center (Cheyenne Mtn AS, CO) and the Alternate Space Control Center (Dalgren Naval Surface Warfare Center, VA).										
(U) FY 2000 (\$ in Thousands)										
(U) \$9,350	Completed facility preparation									
(U) \$21,495	Continued system integration and checkout/replaced radome									
(U) \$1,860	Continued Logistics and training									
(U) \$300	Removed test facility and cleanup test site									
(U) \$33,005	Total									
(U) FY 2001 (\$ in Thousands)										
(U) \$500	Continue system development									
(U) \$574	Continue system integration and checkout									
(U) \$300	Accomplish residual logistics and training									
(U) \$1,374	Total									
The following net transactions are not reflected in the FY01 program total: BTR=+4014K. This transaction is not reflected in other sections of the R-docs where an FY01 total is shown.										
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<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$5,500 Complete formal test and evaluation</p> <p>(U) \$500 Complete logistics tasks</p> <p>(U) \$6,000 Total</p> <p>(U) <u>B. Project Change Summary</u></p> <p>FY00/01: Funds reprogrammed to continue restructured FY00/01 project activities. The radome incident and greater DT&E activity than planned resulted in a change to Initial Operational Capability (IOC) from the 4th Qtr of FY00 to the 2nd Qtr of FY02. Full Operational Capability (FOC) is scheduled for the 4th Qtr of FY02. FY02: \$6M added to program in FY02 to complete formal testing and evaluation.</p> <p>(U) <u>C. Other Program Funding Summary (\$ in Thousands)</u></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> <th style="text-align: center;"><u>FY 2004</u></th> <th style="text-align: center;"><u>FY 2005</u></th> <th style="text-align: center;"><u>FY 2006</u></th> <th style="text-align: center;"><u>FY 2007</u></th> <th style="text-align: center;"><u>Cost to</u></th> <th style="text-align: center;"><u>Total Cost</u></th> </tr> <tr> <th></th> <th style="text-align: center;"><u>Actual</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Complete</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>(U) None</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> <p>(U) <u>D. Acquisition Strategy</u></p> <p>The existing contract with Raytheon was modified in the third quarter of FY98 for the dismantling, shipment, and installation of the radar, and will be extended until FY02.</p> <p>(U) <u>E. Schedule Profile</u></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="4" style="text-align: center;"><u>FY 2000</u></th> <th colspan="4" style="text-align: center;"><u>FY 2001</u></th> <th colspan="4" style="text-align: center;"><u>FY 2002</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) Radome replaced</td> <td></td><td></td><td style="text-align: center;">*</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Begin Formal System Testing and Correct Deficiencies</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">*</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Formal System Testing Completed</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><td></td> </tr> <tr> <td>(U) System Initial Operational Capability</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><td></td> </tr> </tbody> </table> <p>* = Complete event X = Planned event</p>										<u>FY 2000</u>	<u>FY 2001</u>	<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>Cost to</u>	<u>Total Cost</u>		<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>		(U) None												<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>					1	2	3	4	1	2	3	4	1	2	3	4	(U) Radome replaced			*										(U) Begin Formal System Testing and Correct Deficiencies								*					(U) Formal System Testing Completed											X		(U) System Initial Operational Capability											X							
	<u>FY 2000</u>	<u>FY 2001</u>	<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>Cost to</u>	<u>Total Cost</u>																																																																																																													
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BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK			PROJECT 4279		
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 2000</u>		<u>FY 2001</u>		<u>FY 2002</u>
(U)	Radome replacement					2,576		0		0
(U)	Site preparation and support					8,500		0		1,700
(U)	Installation and checkout					17,468		0		0
(U)	Logistics and training					1,691		0		0
(U)	Formal system testing					0		400		3,370
(U)	Complete open development and testing items					0		574		0
(U)	SPO support					2,480		400		930
(U)	Take down test facility and cleanup test site					290		0		0
(U)	Total					33,005		1,374		6,000
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>										
Raytheon Elec Sys Sudbury, MA	C/CPIF/AF	Mar 91	66,912	66,912	49,240	21,503	500	3,370	0	74,613
Site Preparation	Various	Various	N/A	N/A	15,950	8,500	387	1,700	0	26,537
Other PY Organizations			N/A	N/A	2,739	0	0	0	0	2,739
Misc	Various	Various	N/A	N/A	813	372	0	0	0	1,185
Prior years data reflects costs since FY94										
<u>Support and Management Organizations</u>										
MITRE	SS/PR	Oct 99	N/A	N/A	3,901	800	150	250	0	5,101
A&AS	C/PR	Various	N/A	N/A	6,555	953	237	500	0	8,245
Lincoln Lab	SS/PR	Oct 99	N/A	N/A	408	150	50	0	0	608
Program Office	Various	Various	N/A	N/A	518	627	50	180	0	1,375

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE June 2001		
BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305910F SPACETRACK				PROJECT 4279		
(U) Performing Organizations Continued:										
Prior years data reflects costs since FY94										
<u>Support and Management Organizations</u>										
Misc	Various	Various	N/A	N/A	0	100	0	0	100	
Prior years data reflects costs since FY94										
<u>Test and Evaluation Organizations</u>										
None										
(U) Government Furnished Property:										
<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 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</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>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	
<u>Subtotals</u>									<u>Total</u>	
Subtotal Product Development					68,742	30,375	887	5,070	0	105,074
Subtotal Support and Management					11,382	2,630	487	930	0	15,429
Subtotal Test and Evaluation										
Total Project					80,124	33,005	1,374	6,000	0	120,503
Prior years data reflects costs since FY94										

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									DATE June 2001	
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK					PROJECT 4791
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4791 GEODSS Sustainment	5,727	1,155	5,678	0	0	0	0	0	0	12,560
<p>NOTE: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional and subject to change.</p> <p>(U) <u>A. Mission Description</u> The GEODSS Sustainment project began in FY00 to develop and field ten Charge-Coupled Device (CCD) Cameras 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 recently 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 FY04 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 2003. This would result in loss of geosynchronous space situational awareness and less ability to assess the space order of battle of a potential aggressor.</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$2,000 Began CCD design (U) \$1,600 Began camera design (U) \$1,000 Designed MPACS (U) \$1,127 Relocate to and set-up Test bed at Yoder, Colorado from Socorro, NM (U) \$5,727 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u> (U) \$155 Begin operational use of Test Bed at Yoder, Colorado (U) \$500 Complete camera design (U) \$500 Test prototype camera /MPACS (U) \$1,155 Total</p> <p>The following net transactions are not reflected in the FY01 program total: SBIR--14K. These transactions are not reflected in other sections of the R-docs where an FY01 total is shown.</p>										
Project 4791			Page 13 of 26 Pages				Exhibit R-2A (PE 0305910F)			

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

DATE
June 2001

BUDGET ACTIVITY
07 - Operational System Development

PE NUMBER AND TITLE
0305910F SPACETRACK

PROJECT
4791

(U) **A. Mission Description Continued**

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

- (U) \$578 Contingency & closeout efforts on development contractor
- (U) \$1,500 Complete prototype camera and testing
- (U) \$3,600 Initial Spares (need these funds appropriated in OPAF vice RDT&E)
- (U) \$5,678 Total

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

1. To more cost effectively accomplish activities, the prime contractor has chosen to move the Test Bed from Socorro, NM to Yoder, CO. Test Bed was previously listed at Socorro, New Mexico prior to contract award. Some existing Government assets located at the White Sands Missile Range (WSMR) in New Mexico were made available to the GEODSS Sustainment offerors as Government Furnished Property with the flexibility to propose alternative Test Bed locations in order to accomplish project objectives.
2. Production of Modification Kits 2 & 3 has been postponed from FY01, planned for FY03.
3. \$3.6M in FY02 3600 to purchase initial spares was inadvertently placed in the wrong appropriation due to a database error. These funds should be appropriated in PE 35910F in the OPAF appropriation.
4. Prototype mod kit test slipped due to a delay in camera integration.

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

	<u>FY 2000</u>	<u>FY 2001</u>	<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>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) Other APPN									0	0
(U) OPAF (PE 35910F, Space Mods Space, P-1 Line Item #62, BA 3)*		8,682	8,785	2,434						19,901
(U) OPAF (PE 35910F, Spares and Repair Parts,P-1 Line Item #101, BA 5)*		509	27	612	317	27			0	1,492

* For the GEODSS Sustainment project only

(U) **D. Acquisition Strategy**

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

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE June 2001		
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK					PROJECT 4791		
(U) E. Schedule Profile												
		<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>		
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Contract Award		*										
(U) Joint Technical Review			*									
(U) Design Review				*								
(U) Test Bed Standup (Relocate/setup at Yoder, CO)				*								
(U) Prototype Mod Kit Test								X				
(U) Detail Design Technical Interchange Mtg								X				
(U) Site 1 Mod Kit (1st article) production completed											X	
(U) Mod Kit 4 through 9 Production Completed (1st Qtr FY03)												
(U) Operational acceptance at Site 1 (Socorro, NM) (1st Qtr FY03)												
* = Complete event												
X = Planned event												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001			
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK			PROJECT 4791		
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 2000</u>		<u>FY 2001</u>		<u>FY 2002</u>
(U)	System Engineering					1,800		250		80
(U)	Hardware Development					1,700		600		1,900
(U)	Software Development					600		300		0
(U)	Program Office Support					1,627		5		98
(U)	Need funds appropriated in OPAF for Initial Spares					0		0		3,600
(U)	Total					5,727		1,155		5,678
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<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 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>										
TRW, Inc.	SS/CPAF/PR	Mar 00	7,230	7,230	0	4,100	1,150	1,980	0	7,230
Need appropriated in OPAF	N/A	N/A	3,600	0	0	0	0	3,600	0	3,600
<u>Support and Management Organizations</u>										
MITRE	SS/PR	Jan 00	745	745	0	700	0	45	0	745
MIT/Lincoln Lab	SS/PR	Feb 00	365	365	0	365	0	0	0	365
A&AS	C/PR	Mar 00	445	445	0	400	0	45	0	445
SPO	Various	Jan 00	175	175	0	162	5	8	0	175
<u>Test and Evaluation Organizations</u>										
None										
(U) Government Furnished Property:										
<u>Item</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>							
Project 4791										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE					
BUDGET ACTIVITY				PROJECT					
07 - Operational System Development				0305910F SPACETRACK					
				4791					
(U) Government Furnished Property Continued:									
<u>Item</u>	<u>Contract</u>	<u>Award or</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>Method/Type</u>	<u>or Funding</u>	<u>Date</u>	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</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									
<u>Subtotals</u>				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
				<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				0	4,100	1,150	5,580	0	10,830
Subtotal Support and Management				0	1,627	5	98	0	1,730
Subtotal Test and Evaluation									
Total Project				0	5,727	1,155	5,678	0	12,560

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE June 2001																																																				
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305910F SPACETRACK	PROJECT 4930																																																				
<p>(U) <u>D. Acquisition Strategy</u> The project will begin with Concept Exploration in FY02 and transition to System Development & Demonstration in FY04. Production is scheduled for FY09 with first launch planned in FY11. Contract vehicle is TBD.</p> <p>(U) <u>E. Schedule Profile</u></p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 30%;"></th> <th colspan="4" style="text-align: center;"><u>FY 2000</u></th> <th colspan="4" style="text-align: center;"><u>FY 2001</u></th> <th colspan="4" style="text-align: center;"><u>FY 2002</u></th> </tr> <tr> <th></th> <th>1</th><th>2</th><th>3</th><th>4</th> <th>1</th><th>2</th><th>3</th><th>4</th> <th>1</th><th>2</th><th>3</th><th>4</th> </tr> </thead> <tbody> <tr> <td>(U) Milestone A</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><td></td> </tr> <tr> <td>(U) Begin Concept Exploration & Technology Development</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><td></td> </tr> </tbody> </table> <p>* = Complete event X = Planned event</p>				<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>					1	2	3	4	1	2	3	4	1	2	3	4	(U) Milestone A									X				(U) Begin Concept Exploration & Technology Development									X			
	<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>																																													
	1	2	3	4	1	2	3	4	1	2	3	4																																										
(U) Milestone A									X																																													
(U) Begin Concept Exploration & Technology Development									X																																													
Project 4930	Page 19 of 26 Pages	Exhibit R-2A (PE 0305910F)																																																				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001				
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK			PROJECT 4930			
(U) A. Project Cost Breakdown (\$ in Thousands)											
						<u>FY 2000</u>		<u>FY 2001</u>		<u>FY 2002</u>	
(U)	Analysis of Alternatives (AoA)					0		0		2,243	
(U)	Concept Exploration & Technology Development					0		0		2,870	
(U)	Program Office Support					0		0		150	
(U)	Total					0		0		5,263	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
	<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 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
		<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
	<u>Product Development Organizations</u>										
	Multiple contractors	TBD	TBD	TBD	5,113	0	0	0	5,113	Continuing	TBD
	<u>Support and Management Organizations</u>										
	Program Office	N/A	N/A	N/A	150	0	0	0	150	Continuing	TBD
	<u>Test and Evaluation Organizations</u>										
	None										
(U) Government Furnished Property:											
	<u>Item</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</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 4930					Page 20 of 26 Pages			Exhibit R-3 (PE 0305910F)			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE June 2001			
BUDGET ACTIVITY			PE NUMBER AND TITLE		PROJECT			
07 - Operational System Development			0305910F SPACETRACK		4930			
			<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
			<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>								
Subtotal Product Development			0	0	0	5,113	TBD	TBD
Subtotal Support and Management			0	0	0	150	TBD	TBD
Subtotal Test and Evaluation								
Total Project			0	0	0	5,263	TBD	TBD

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE June 2001
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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305910F SPACETRACK	PROJECT 5010
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(U) **A. Mission Description Continued**

(U) FY 2002 (\$ in Thousands)

- (U) \$8,750 SSAIO stand-up and initial operations in Colorado Springs
- (U) \$3,900 SSA C2 Concept & Technology Development
- (U) \$3,000 Deep space surveillance augmentation - System Development
- (U) \$15,650 Total

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

FY02 new start effort.

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

	<u>FY 2000</u>	<u>FY 2001</u>	<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>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) AF RDT&E										
(U) Other APPN										
None										

(U) **D. Acquisition Strategy**

In FY02, the SSAIO project will begin standing up the office in Colorado Springs, CO, developing a SSA architecture, reviewing/updating FY00 SSTF results, and integrating modernization plans/investment strategies across the Services and USG agencies.

SSA C2 FY02 funding will begin to develop capabilities for improved processing, analysis and dissemination of space surveillance data evolving to an integrated space surveillance C2 architecture.

The effort to augment deep space surveillance capability will begin in FY02 to develop visible wavelength sensors on small aperture telescopes using sensor technology similar to the upgraded GEODSS telescopes. Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) technology will be used. The telescopes will be geographically dispersed and operate remotely with no on-site operators. Planned Final Operational Capability (FOC) is FY05.

(U) **E. Schedule Profile**

FY 2000 FY 2001 FY 2002

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001				
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305910F SPACETRACK			PROJECT 5010			
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>											
					<u>FY 2000</u>		<u>FY 2001</u>			<u>FY 2002</u>	
(U)	SSAIO Stand-up and initial operations in Colorado Springs									8,312	
(U)	SSA C2 Concept & Technology Development									3,705	
(U)	Deep space surveillance augmentation - System Development									2,850	
(U)	Program Office Support									783	
(U)	Total									15,650	
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
(U) <u>Performing Organizations:</u>											
	<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 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</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>										
	Multiple Contractors	TBD	TBD	TBD		0	0	0	14,867	Continuing	TBD
	<u>Support and Management Organizations</u>										
	Program Office	N/A	N/A	N/A		0	0	0	783	Continuing	TBD
	<u>Test and Evaluation Organizations</u>										
(U) <u>Government Furnished Property:</u>											
	<u>Item</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Delivery</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</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										
	<u>Support and Management Property</u>										
	None										
	<u>Test and Evaluation Property</u>										
	None										
Project 5010					Page 25 of 26 Pages			Exhibit R-3 (PE 0305910F)			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE June 2001	
BUDGET ACTIVITY			PE NUMBER AND TITLE			PROJECT
07 - Operational System Development			0305910F SPACETRACK			5010
	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development	0	0	0	14,867	TBD	TBD
Subtotal Support and Management	0	0	0	783	TBD	TBD
Subtotal Test and Evaluation						
Total Project	0	0	0	15,650	TBD	TBD