

**UNCLASSIFIED**

PE NUMBER: 0305206F

PE TITLE: Airborne Reconnaissance Systems

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>February 2004</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>
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Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	64.380	77.930	55.464	58.581	59.384	61.209	61.565	Continuing	TBD
4818 Imaging and Targeting Support	8.707	13.785	12.600	15.355	16.149	17.157	16.832	Continuing	TBD
4819 Common Data Link (CDL)	48.451	45.882	30.597	35.178	36.059	36.742	37.310	Continuing	TBD
4882 Compass Bright	4.784	4.897	2.123	5.162	5.256	5.356	5.438	Continuing	TBD
5038 Network Centric Collaborative Targeting	2.438	11.441	8.196	0.960	0.000	0.000	0.000	Continuing	TBD
5092 JTC/SIL MUSE	0.000	1.925	1.948	1.926	1.920	1.954	1.985	Continuing	TBD

- FY04, project 674819, Congressional action added \$1.0M for ultra-wideband airborne laser communications.

- FY03, project 674818, \$8.7M consisted of: \$6.7 Congressional add for Theater Airborne Reconnaissance Systems (TARS) and \$2M for Senior Year Electro-optical Reconnaissance Systems (SYERS).

- FY03, project 674818, Congressional action transferred \$15.775M from Imaging and Targeting Support (ITS) (Project 674818) program to PE 0305205F, Endurance Unmanned Aerial Vehicles, Project 674799, Global Hawk. FY03 ITS funds were executed from Global Hawk program to support all approved ITS projects. FY04-09 ITS funds will be executed from project 674818, ITS.

- FY03, project 675092, Joint Technology Center/System Integration Laboratory Multiple UAV Simulation Environment (JTC/SIL MUSE) was transferred from PE 0308601F, Modeling and Simulation, into PE 0305206F (Project 675092) starting in FY04. FY03 data in PE 0308601F.

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

The Airborne Reconnaissance Systems program coordinates the development of advanced airborne reconnaissance system technologies (i.e., sensors, data links, targeting networks and products, and quick reaction capabilities) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objective is to develop, demonstrate, and rapidly transition advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline. This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time intelligence, surveillance, and reconnaissance (ISR). This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Previous President's Budget	61.535	77.823	66.609
(U) Current PBR/President's Budget	64.380	77.930	55.464
(U) Total Adjustments	2.845	0.107	
(U) Congressional Program Reductions	-0.650	-0.224	
Congressional Rescissions		-0.669	
Congressional Increases		1.000	
Reprogrammings	3.495		
SBIR/STTR Transfer			
(U) <u>Significant Program Changes:</u>			

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

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BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT NUMBER AND TITLE		
<b>07 Operational System Development</b>				<b>0305206F Airborne Reconnaissance Systems</b>			<b>4818 Imaging and Targeting Support</b>		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4818 Imaging and Targeting Support	8.707	13.785	12.600	15.355	16.149	17.157	16.832	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

FY 03 consist of: \$6.7M Congressional add for Theater Airborne Reconnaissance Systems (TARS) and \$2M for Senior Year Electro-optical Reconnaissance Systems (SYERS).

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

The purpose of the Imaging and Targeting Support (ITS) program is to develop next-generation, common imagery reconnaissance sensors (e.g., radar and electro-optical systems) for multiple airborne platforms, and sensor products to aid in rapid targeting (e.g., geolocation models, sensor-based exploitation tools, sensor networking capabilities). Developmental efforts pursued are improved sensors (including hyperspectral information [HSI], measurement and signature intelligence [MASINT] sensors, polarimetric imaging, ground moving target indication, foliage penetration, and other radar and electro-optical modes), increased geolocation accuracy, advanced sensor data correlation, automated target detection, network centric warfare, and other intelligence, surveillance, and reconnaissance (ISR) technologies to reduce both target search and kill chain timelines; as well as, supporting traditional intelligence activities. ITS will increase interoperability amongst developed systems by developing common standards and tools. ITS focuses on the following thrust areas:

Development of common radar and electro-optical sensors (e.g., Synthetic Aperture Radar (SAR), Electro-Optical (EO), and Infrared (IR)) and their operational modes (e.g., High Resolution Imagery, Moving Target Indication, Spectral Identification) for multiple airborne platforms.

Development of advanced airborne tactical sensor processing algorithms and tools (e.g., automatic registration, automatic target detection/recognition, network centric warfare). These efforts focus on reducing the find, fix and track elements of the time critical targeting kill-chain timeline while improving operator and decision-maker efficiency.

Enhancement of imagery intelligence (IMINT) product quality. Development of open architecture between tactical sensor models and target exploitation tools. Development of tactical sensor models for airborne reconnaissance platforms. Development and implementation of imagery standards (e.g., Common Ground Moving Target Indicator [GMTI], National Imagery Transmission Format [NITF] for HSI). Monitoring and enhancement of IMINT product quality (e.g., radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (i.e. from sensor to user).

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Congressional add for SYERS-2 improvements. Effort will add new software to upgrade the geo-location accuracy, provide an automated BE finder and a capability to detect, identify, annotate and provide visualization of user-defined moving targets within the SYERS-2 images. Completes in 4Q FY04.	1.900		
(U) Congressional add for TARS. Completes airborne information transmission data system (ABIT), EO and SAR pod,	6.707		

**Exhibit R-2a, RDT&E Project Justification**

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BUDGET ACTIVITY <b>07 Operational System Development</b>	PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>	PROJECT NUMBER AND TITLE <b>4818 Imaging and Targeting Support</b>
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and solid state recorder development. Program will complete system development and demonstration ( SDD) phase and be ready for LRIP end of FY04.

(U) Mission Support	0.100	1.035	1.294
(U) Continue efforts to transition HSI technology, such as the Spectral Infrared Imaging Technology Testbed (SPIRITT) sensor, into airborne reconnaissance platforms		7.050	6.146
(U) Continue image quality baselining and assessment efforts for airborne reconnaissance sensors.		2.500	2.000
(U) Develop and deliver tactical sensor models		3.000	2.160
(U) Develop and integrate complex Synthetic Aperture Radar (SAR) compression techniques		0.200	1.000
(U) Total Cost	8.707	13.785	12.600

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

	<u>FY 2003</u> <u>Actual</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>FY 2006</u> <u>Estimate</u>	<u>FY 2007</u> <u>Estimate</u>	<u>FY 2008</u> <u>Estimate</u>	<u>FY 2009</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) AF RDT & E (PE 63665A, AFRL)	3.490	2.640	2.880	0.600					
(U) AF RDT&E	15.775								
(U) Other APPN									

- Air Force Research Lab is contributing to the SPIRITT HSI sensor development.  
 - Per Congressional direction in FY03 PB, \$15.775M was transferred from PE 0305206F, project 4818 (ITS) to PE0305205F, Endurance Unmanned Aerial Vehicles, project 4799, Global Hawk. FY03 funds (\$15.775) for project 4818, ITS, were executed from the Global Hawk project to support approved Imaging and Targeting Support activities.

**(U) D. Acquisition Strategy**

This program targets high payoff technologies ready to integrate into operational systems to satisfy critical unmet airborne imagery sensor and targeting system requirements. Funds are provided to develop these systems, and to reduce risk associated with their implementation in production systems. Emphasis is placed on maximizing commercial and national development efforts and investment. Multiple contracting methods are used including the use of Engineering Change Proposals (ECPs) to modify existing contracts and new contracts. Contracts have been awarded both competitively and on a sole source basis.

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Exhibit R-3, RDT&E Project Cost Analysis										DATE <b>February 2004</b>		
BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>				PROJECT NUMBER AND TITLE <b>4818 Imaging and Targeting Support</b>				
<u>(U) Cost Categories</u>	<u>Contract Method</u>	<u>Performing Activity &amp;</u>	<u>Total</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>Cost to</u>	<u>Total</u>	<u>Target</u>
(Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>&amp; Type</u>	<u>Location</u>	<u>Prior to FY</u>	<u>2003</u>	<u>2003</u>	<u>2004</u>	<u>2004</u>	<u>2005</u>	<u>2005</u>	<u>Complete</u>	<u>Cost</u>	<u>Value of</u>
			<u>2003</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>			<u>Contract</u>
			<u>Cost</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>			
<u>(U) Product Development</u>												
BAE Systems (SPIRITT)	C/CPFF	Greenlawn, NY	0.000			7.050	Apr-04	6.146	Dec-05	Continuing	TBD	24.478
Northrop Grumman (SAR Compression)	SS/CPFF	Linthicum Heights, MD	0.000			0.200	Feb-04	1.000	Jan-05	0.000	1.200	2.557
Eastman Kodak (Image Quality)	SS/CPFF	Rochester, NY	0.000			1.250	Mar-04	1.000	Feb-05	Continuing	TBD	8.175
General Dynamics (Image Quality)	SS/CPFF	Ann Arbor, MI	0.000			1.250	Mar-04	1.000	Feb-05	Continuing	TBD	8.175
General Dynamics (API/TRD)	SS/CPFF	Dayton, OH	0.670			0.880	Jan-04	0.000		0.000	1.550	3.704
Others	Various	Various	0.000			2.120		2.160	Feb-05	4.780	9.060	9.060
BAE (TARS)	C/CPFF	Greenlawn, NY	3.862	2.780	Sep-03	0.000		0.000		0.000	6.642	6.642
Lockheed Martin (TARS)	C/FFP	Goodyear, AZ	4.903	3.043	Aug-03	0.000		0.000		0.000	7.946	7.956
L3Comm (TARS)	C/CP	Salt Lake City, UT	1.000	0.000	Sep-02	0.000		0.000		0.000	1.000	1.000
B.F. Goodrich (SYERS)	SS/CPFF	Lexington, MA	0.000	1.800	Sep-03	0.000		0.000		0.100	1.900	1.900
Subtotal Product Development			10.435	7.623		12.750		11.306		Continuing	TBD	73.647
Remarks: FY03 funding for all projects, lines 1-9, were executed from PE 0305206 GH, per FY03PB Congressional action.												
<u>(U) Support</u>												
Other Gov't Orgs	Various	Various	1.657	0.400	Apr-04					0.000	2.057	2.057
Subtotal Support			1.657	0.400		0.000		0.000		0.000	2.057	2.057
Remarks:												
<u>(U) Test &amp; Evaluation</u>												
Prior	Various	Various	0.638							0.000	0.638	0.638
Range Support (SYERS in 04)	Various	TBD		0.100	Jun-04					0.000	0.100	0.100
TARS T&E	MIPR	Various		0.200	Apr-04					0.000	0.200	0.500
Subtotal Test & Evaluation			0.638	0.300		0.000		0.000		0.000	0.938	1.238
Remarks:												
<u>(U) Management</u>												
ASC (ITS and TARS)	Various	Wright Patterson, AFB		0.384	Oct-02	1.035	Oct-03	1.294	Oct-04	Continuing	TBD	TBD
Subtotal Management			0.000	0.384		1.035		1.294		Continuing	TBD	TBD
Remarks:												
<u>(U) Total Cost</u>			12.730	8.707		13.785		12.600		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

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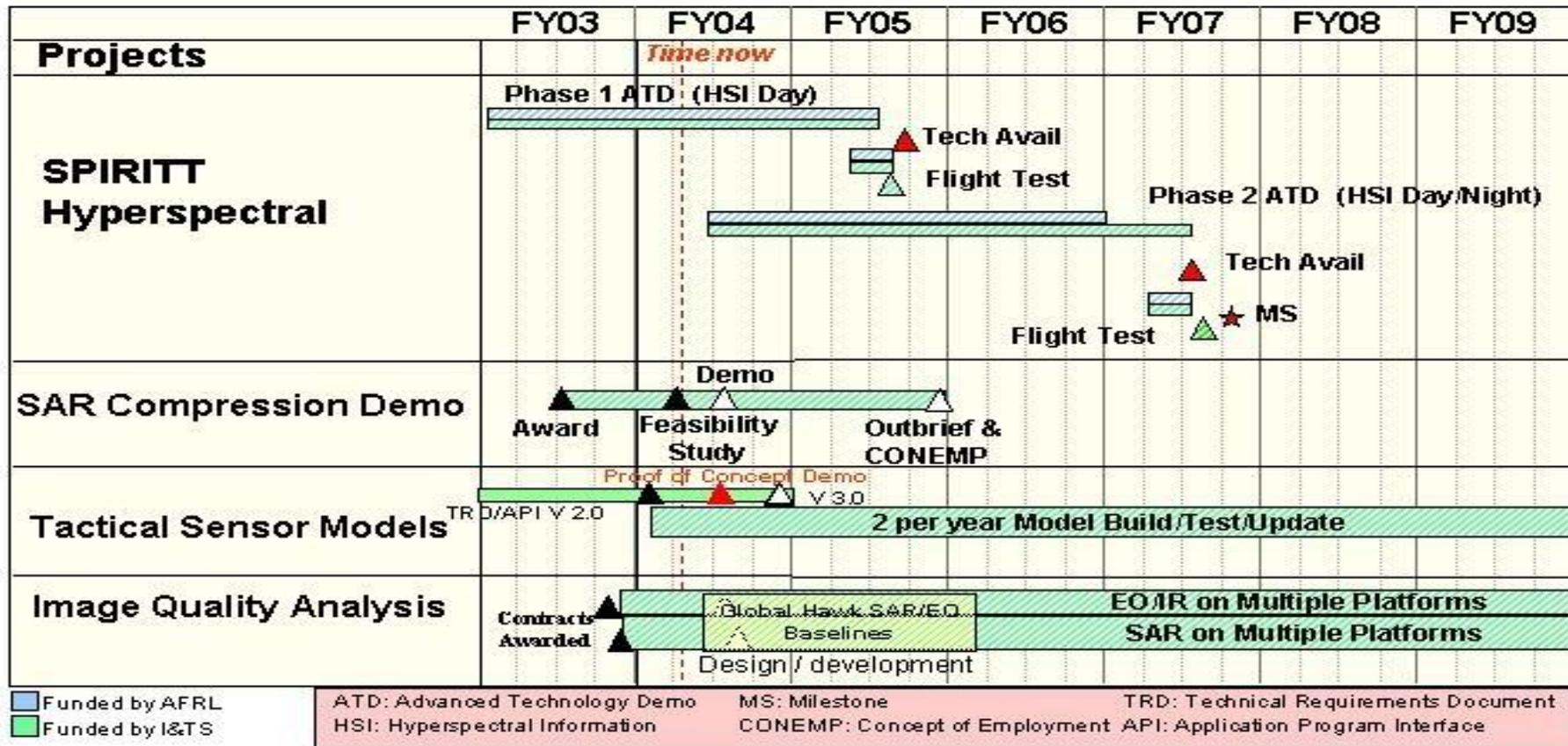
BUDGET ACTIVITY  
07 Operational System Development

PE NUMBER AND TITLE  
0305206F Airborne Reconnaissance  
Systems

PROJECT NUMBER AND TITLE  
4818 Imaging and Targeting Support



# I&TS Schedule



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**Exhibit R-4a, RDT&E Schedule Detail**

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(U) <u>Schedule Profile</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) ITS: SPIRITT ATD Contract Award	3Q		
(U) ITS: SPIRITT ATD Phase I Demonstration			2Q
(U) ITS: Tactical Sensor Model Contract Award		1Q	
(U) ITS: Tactical Sensor Model Deliveries		4Q	1Q
(U) ITS: Image Quality Contract Award for EO/IR/SAR	4Q		
(U) ITS: Image Quality Assessment Program begins		4Q	
(U) ITS: Complex SAR Compression Contact Award	2Q		
(U) ITS: Complex SAR Proof of Concept Demonstration		2Q	
(U) SYERS: Contract Award, Explortation software	1Q		
(U) SYERS: Exploitation Software delivery		1Q	
(U) TARS: Electro-Optical pod on Contract	1Q		
(U) TARS: EO Pod Delivered		4Q	

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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>				<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>			<b>PROJECT NUMBER AND TITLE</b> <b>4819 Common Data Link (CDL)</b>		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4819 Common Data Link (CDL)	48.451	45.882	30.597	35.178	36.059	36.742	37.310	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

- FY03: \$1.7M Congressional Plus-up for development of Ultra-wideband Airborne Laser Communications.
- FY04: \$1.0M Congressional Plus-up to continue Ultra-wideband Airborne Laser Communications.
- FY04: \$4.0M added to address time-shifting of MP-CDL development.

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

The objective of the CDL effort within the Air Force is to define an interoperable command, control and communications capability for intelligence and reconnaissance assets to include both manned and unmanned platforms. CDL will achieve interoperable communications paths by employing a JTRS/SCA architecture based on developed hardware, software, and waveforms to promote commonality among the Services. As the CDL Executive Agent, the Air Force is responsible for ensuring design configuration commonality and interoperability. The CDL design will permit existing and future reconnaissance assets to operate worldwide, providing sensor data directly via point-to-point or via a point-multipoint broadcast to ground sites and airborne platforms or via satellite or air-to-air relay when the asset and ground site are not within line-of-sight. This effort will integrate commercial and other satellite communications into the available satellite relay options to ensure sufficient wideband data relay capability. The system will have sufficient bandwidth to accommodate numerous sensors collecting Signals Intelligence (SIGINT), Imagery Intelligence (IMINT) (including video), Multi-spectral and other data. CDL concept and technology development and system development and demonstration efforts will support continuous improvements and implementation of line-of-sight and network Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) capabilities to enable a joint global strike task force. Modular design allows for future technology insertion. The commonality of modular components reduces non-recurring engineering and life cycle costs to the user. Interoperability provides for the exchange of data across service or agency boundaries. (Note: the term A-series refers to full rate/capability CDL systems and T-Series refers to TCDL systems)

This program is categorized as Budget Activity 07 because it provides for development of technologies and capabilities in support of operational system development.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Completed requirement to lease a commercial transponder in support of Global Hawk and studies and analysis of alternative satellite communications to support airborne reconnaissance relay requirements.	2.568	0.000	0.000
(U) Continued evolutionary development of TCDL (T-Series) for operational suitability on ISR platforms such as Guardrail Legacy Replacement, P-3, EP-3, Tactical UAV and Predator.	12.981	16.152	14.658
(U) Complete Airborne Information Transmission (ABIT) (A-Series) technology integration into CDL systems for application to ISR platforms such as Theater Airborne Reconnaissance System and completed ABIT system cost reduction initiatives.	4.034	3.615	0.000
(U) Continued configuration control of CDL architecture, standards, specification, and modules; provide for Joint-Service interoperability certification and spectrum management.	3.423	2.664	2.411

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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>	<b>PROJECT NUMBER AND TITLE</b> <b>4819 Common Data Link (CDL)</b>
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(U) Complete current development phase of KGV-135 replacement and CDL migration to DoD network-based encryption architecture.	0.140	0.104	0.000
(U) Continued development of advanced technology insertion activities (to include studies and analysis of future data link requirements and architectures), CDL certification test equipment development, and related Joint Service interoperability certification and spectrum management requirements.	5.170	5.673	7.970
(U) Continued Multi-Platform-Common Data Link (MP-CDL) development of wideband integrated common data link to support Multi-Platform Radar Technology Insertion Program (MP-RTIP) and Network Centric Collaborative Targeting (NCCT).	14.751	14.758	2.410
(U) Continued NCCT wideband integrated common data link development	1.000	0.000	1.000
(U) Continued Ultra-wideband Airborne Laser Communications development. This is an FY04 Congressional Plus-up.	1.700	1.000	
(U) Provide CDL mission support.	2.684	1.916	2.148
(U) Total Cost	48.451	45.882	30.597

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

	<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>Complete</u>	
(U) None									

(U) **D. Acquisition Strategy**

CDL funds are provided to various government laboratories and program offices to support new and on-going development efforts in support of providing a common, interoperable wideband data link as mandated by ASD(NII) policy.

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Exhibit R-3, RDT&E Project Cost Analysis										DATE <b>February 2004</b>		
BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>				PROJECT NUMBER AND TITLE <b>4819 Common Data Link (CDL)</b>				
<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
<u>(U) Product Development</u> L-3 Communications	Competitive/Sole Source; CPAF, CPFF, CPIF	Salt Lake City, UT	39.539	29.323	Nov-02	27.428	Oct-03	17.251	Nov-04	Continuing	TBD	
Harris Corp	Competitive/Sole Source; CPFF	Melbourne, FL	14.032	0.730	Dec-02	0.860	Mar-04			Continuing	TBD	
Trex Corp*	Competitive; CPIF	San Diego, CA	6.400							0.000	6.400	6.400
SATCOM Interop/Global Grid/Other Orgs*	Sole Source; MIPR, CPIF	Multiple	9.082	0.140	Apr-03	0.100	May-04			0.000	9.322	9.082
L-3 COMCEPT	Competitive; CPFF	Rockwall, TX	21.393	1.000	Jun-03	0.000		1.000	Jan-05	Continuing	TBD	
ITT	Competitive; IDIQ	Beavercreek, OH	0.000	1.700	Jun-03	1.000	Mar-04			Continuing	TBD	
Cubic	Competitive; CPFF	San Diego, CA	0.000	2.165	Feb-03	3.160	Dec-03	0.000		Continuing	TBD	
Other	Sole Source; MIPR, CPFF	Multiple	23.360	0.994	Dec-02	1.017	Nov-03	0.076	Nov-04	Continuing	TBD	
Subtotal Product Development			113.806	36.052		33.565		18.327		Continuing	TBD	15.482
Remarks:												
<u>(U) Support</u> Various	Competitive/Sole Source; CPFF, MIPR	Multiple	10.485	7.594	Nov-02	7.603	Oct-03	7.289	Nov-04	Continuing	TBD	
Subtotal Support			10.485	7.594		7.603		7.289		Continuing	TBD	0.000
Remarks:												
<u>(U) Test &amp; Evaluation</u> JITC	MIPR	Fort Huachuca, AZ	1.552	0.690	Nov-02	1.281	Oct-03	1.160	Nov-04	Continuing	TBD	



Exhibit R-4, RDT&E Schedule Profile

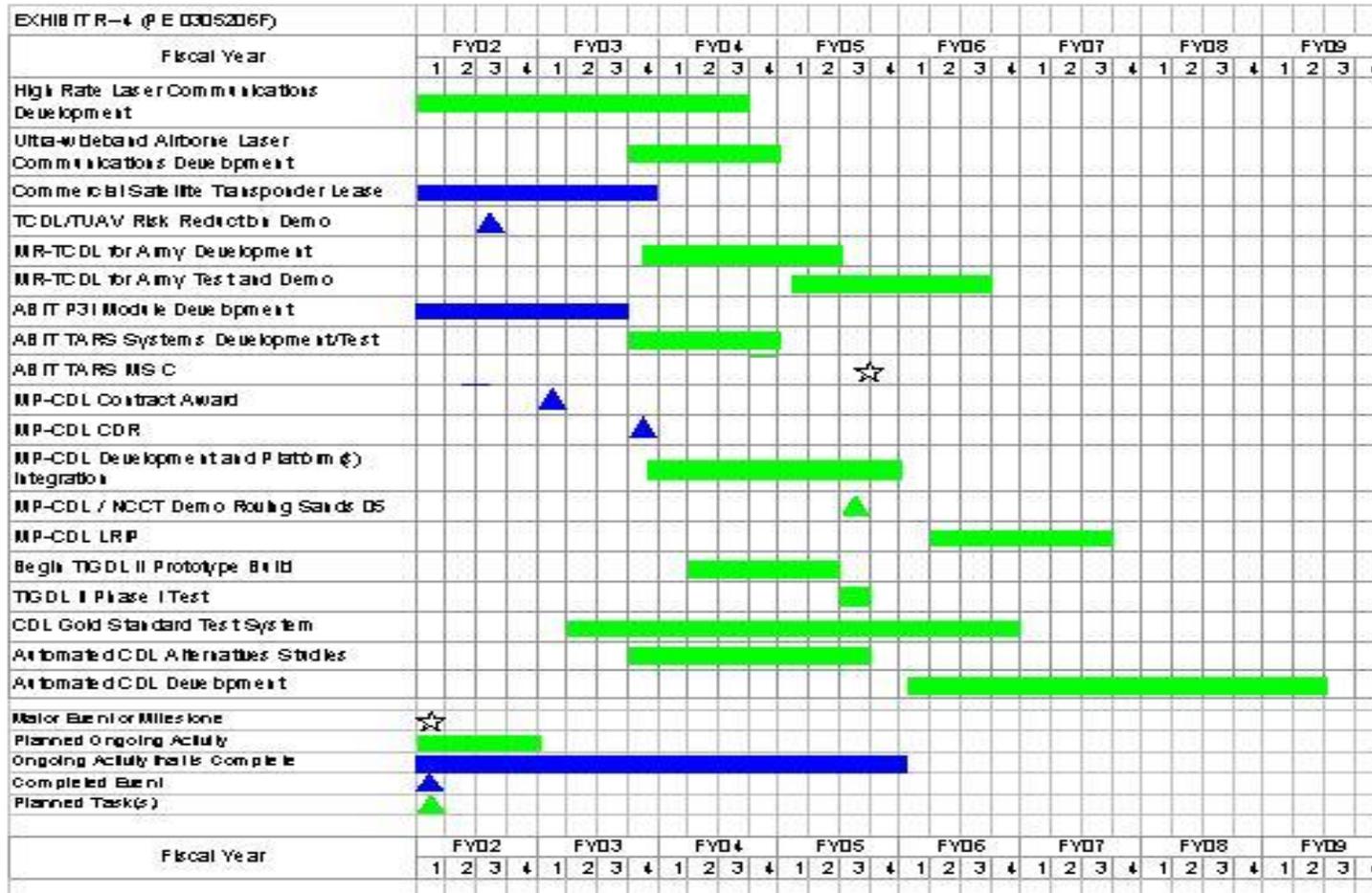
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BUDGET ACTIVITY  
07 Operational System Development

PE NUMBER AND TITLE  
0305206F Airborne Reconnaissance  
Systems

PROJECT NUMBER AND TITLE  
4819 Common Data Link (CDL)



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BUDGET ACTIVITY <b>07 Operational System Development</b>	PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>	PROJECT NUMBER AND TITLE <b>4819 Common Data Link (CDL)</b>
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<u>(U) Schedule Profile</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) High rate laser communications development	1-4Q	1-3Q	
(U) Ultra-wideband airborne laser communications development	4Q	1-4Q	
(U) MR-TCDL for Army Test and Demo			1-4Q
(U) ABIT TARS MS C			3Q
(U) MP-CDL Contract Award	1Q		
(U) MP-CDL CDR	4Q		
(U) MP-CDL / NCCT Demo Roving Sands 05			3Q
(U) TIGDL-II Phase I Test			3Q

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BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>			PROJECT NUMBER AND TITLE <b>4882 Compass Bright</b>		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4882 Compass Bright	4.784	4.897	2.123	5.162	5.256	5.356	5.438	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

All funds in Compass Bright are 3600 RDT&E

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

The COMPASS BRIGHT program develops, demonstrates, and rapidly transitions advanced Air Force-specific signal intelligence (SIGINT) and radio frequency (RF) measurement and signature intelligence (MASINT) capabilities against emerging and future target signals. It is the only USAF program that pursues basic SIGINT research.

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

The reduction in FY05 is due to an overall cut to the PE that was spread among several BPACs and does not affect ongoing projects. Since COMPASS BRIGHT accepts proposals for development on a year-by-year basis, reductions to the program such as this result in no new efforts being started.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Accomplishment/Planned Program	0.000	0.000	
(U) Continue COMPASS BRIGHT development projects in the signal intelligence (SIGINT) and radio frequency (RF) measurement and signature intelligence (MASINT) areas	4.384	4.427	1.840
(U) Mission Support, Program Management Activities	0.400	0.470	0.283
(U) Total Cost	4.784	4.897	2.123

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

	<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 Complete</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) AF RDT&E									
(U) Other APPN									

**(U) D. Acquisition Strategy**

The COMPASS BRIGHT program objective is to develop technologies for application in SIGINT and RF MASINT systems/subsystems. Acquisition and production of these developed technologies will occur within the appropriate platform programs. On-going COMPASS BRIGHT technology development and demonstration contracts will continue through existing laboratory relationships and other existing contractual vehicles. The acquisition approach for future development projects will emphasize full and open competition.

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

DATE

**February 2004**

BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
<b>07 Operational System Development</b>			<b>0305206F Airborne Reconnaissance Systems</b>					<b>4882 Compass Bright</b>				
<u>(U) Cost Categories</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>Cost to</u>	<u>Total</u>	<u>Target</u>
(Tailor to WBS, or System/Item Requirements) (\$ in Millions)			<u>Prior to FY</u>	<u>2003</u>	<u>2003</u>	<u>2004</u>	<u>2004</u>	<u>2005</u>	<u>2005</u>	<u>Complete</u>	<u>Cost</u>	<u>Value of</u>
			<u>2003</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>			<u>Contract</u>
			<u>Cost</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>			
<u>(U) Product Development</u>												
Various	Various		0.000	4.384		4.427		1.840		Continuing	TBD	
Subtotal			0.000								0.000	
Subtotal Product Development			0.000	4.384		4.427		1.840		Continuing	TBD	0.000
Remarks:												
<u>(U) Support</u>												
Subtotal			0.000								0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
<u>(U) Test &amp; Evaluation</u>												
None											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
<u>(U) Management</u>												
ASC/RAJ				0.400		0.470		0.283		Continuing	TBD	
Subtotal Management			0.000	0.400		0.470		0.283		Continuing	TBD	0.000
Remarks:												
<u>(U) Total Cost</u>			0.000	4.784		4.897		2.123		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

DATE  
**February 2004**

BUDGET ACTIVITY  
**07 Operational System Development**

PE NUMBER AND TITLE  
**0305206F Airborne Reconnaissance Systems**

PROJECT NUMBER AND TITLE  
**4882 Compass Bright**



# COMPASS BRIGHT Project Schedules

	FY03	FY04	FY05	FY06	FY07	FY08	FY09
<b>FIREHAWK</b>	██████████						
<b>Little Weasel</b>	██████████						
<b>SWCR</b>	██████████						
<b>Beamformer</b>		██████████					
<b>SUAVE-A</b>		██████████					
<b>MUD</b>		██████████					
<b>MPA</b>		██████████					

**Note1: Project descriptions are attached.**

**Note 2: COMPASS BRIGHT Projects are 1-2 years in duration, thus no outyear projects are shown**

*Integrity - Service - Excellence*

## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance  
Systems

PROJECT NUMBER AND TITLE

4882 Compass Bright



## Project Descriptions

- **FIREHAWK**
  - Language Sorting System that will enhance reporting and tracking of specific entities to theater and national authorities to reduce the time-line for the TCT process.
- **Little Weasel**
  - Little Weasel will demonstrate the military worth of employing an integrated ELINT payload from a Unmanned Aerial Vehicle (UAV) to support the lethal SEAD/DEAD mission.
- **Superwideband Compressive Receiver (SWCR)**
  - Dramatically improve detection of short-on-time and low-sidelobe threat emitters from airborne ISR platforms by demonstrating the enhanced probability-of-intercept (POI) enabled by wide-instantaneous-bandwidth SWCR
- **Beamforming Receiver Architecture**
  - Classified
- **Small UAV Experiment Payload A (SUAVE-A)**
  - Classified
- **Multi-User Detection (MUD)**
  - Utilize faster processors, beamforming capabilities, and state-of-the-art interference cancellation techniques, to develop a real-time wideband MUD capability
- **Multi-Protocol Architecture (MPA)**
  - Classified

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<b>Exhibit R-4a, RDT&amp;E Schedule Detail</b>	DATE <b>February 2004</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>	<b>PROJECT NUMBER AND TITLE</b> <b>4882 Compass Bright</b>
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	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) <b><u>Schedule Profile</u></b>			
(U) FY03 Projects Authorized to Proceed	3Q		
(U) FY04 Proposal Call	4Q		
(U) FY04 Proposals Evaluated and Approved		1Q	
(U) FY04 Projects Authorized to Proceed		2Q	
(U) Little Weasel Demo Flight		4Q	
(U) FIREHAWK Demo		4Q	
(U) FY06 Prposal Call			3Q
(U) SUAVE-A Demo			4Q
(U) MUD Demo			4Q
(U) MPA Demo			4Q
No new projects will be started in FY05 due to funding cut			

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**Exhibit R-2a, RDT&E Project Justification**

DATE  
**February 2004**

<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>				<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>			<b>PROJECT NUMBER AND TITLE</b> <b>5038 Network Centric Collaborative Targeting</b>		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5038 Network Centric Collaborative Targeting	2.438	11.441	8.196	0.960	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

- FY03: NCCT received \$8M Congressional plus-up in Manned Reconnaissance Systems PE 0305207F (see Section C, RC-135 below).

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

The Network Centric Collaborative Targeting (NCCT) is a CENTCOM sponsored Advanced Concept Technology Demonstration (ACTD) initiated in FY01 that will demonstrate technologies and operational concepts required by Joint/Coalition warfighters. It will provide significant improvements in accuracy and timeliness of time sensitive targeting through 'front end' horizontal integration and collaboration of multiple intelligence, surveillance, and reconnaissance (ISR) assets. NCCT will use a spiral development process to integrate, demonstrate, and assess the ACTD capabilities. The NCCT prototype network, expanded common network processing, and participant interface modules will be installed on selected ISR platforms and systems for demonstrations during FY04 and FY05.

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Continue development of NCCT core technology such as NCCT Network Controller, NCCT Communications Equipment, and NCCT Operations Interface.	1.000	6.800	4.646
(U) Platform Integration Costs	0.809	3.791	2.600
(U) Indirect Engineering Support	0.213	0.250	0.250
(U) Test and Evaluation	0.116	0.100	0.200
(U) Management	0.300	0.500	0.500
(U) Total Cost	2.438	11.441	8.196

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

	<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>Complete</u>	
(U) AF RDT&E									
(U) E-3 AWACS PE 0207417F	0.250	0.500							0.900
(U) E-8 JSTARS PE 0207581F	0.250	0.500							1.000
(U) RC-135 PE 0305207F	9.000	1.000	1.000	0.100					12.100
(U) DCGS PE 0305208F									1.000

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

DATE

February 2004

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance  
Systems

PROJECT NUMBER AND TITLE

5038 Network Centric Collaborative  
Targeting(U) **C. Other Program Funding Summary (\$ in Millions)**

(U) CDL PE 0305206F (Project 4819)	1.005	0.000	1.000	1.000	18.367
(U) OSD PE 0603750D	5.000	5.000	1.000	1.000	17.000
(U) Army Guardrail PE 0203744A	0.250	1.000	1.000	1.000	3.250
(U) Other APPN					

The ACTD includes participating platforms as shown above. United Kingdom Nimrod is also participating in the ACTD.

(U) **D. Acquisition Strategy**

NCCT approved as an ACTD by USD(AT&L) and validated by Joint Requirements Oversight Council in FY01. ASC/RAB, Big Safari at Wright Patterson AFB, manages the Cost Plus Fixed Fee contract used to develop NCCT core technology. Individual platform program offices (Rivet Joint, Joint STARS, AWACS, Air Force DCGS, Airborne Overhead Interoperability Office, and Army Guardrail) manage and contract directly for Platform Interface Module development and integration on their platforms. United Kingdom Nimrod program is participating with their own funds.

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

DATE

**February 2004**

BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
<b>07 Operational System Development</b>			<b>0305206F Airborne Reconnaissance Systems</b>					<b>5038 Network Centric Collaborative Targeting</b>				
<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
<u>(U) Product Development</u> L-3 ComCept, Inc.	Multiple	Prime Contractor/Rockwall, TX		1.000	Oct-02	6.800	Oct-03	4.646	Oct-04	Continuing	TBD	
Platform Specific Contractors	Various	Platform Integration/ Various		0.809		3.791	Feb-04	2.600	Feb-05	Continuing	TBD	
Subtotal Product Development			0.000	1.809		10.591		7.246		Continuing	TBD	0.000
Remarks:												
<u>(U) Support</u> Various Contractors	Various	Indirect engineering support to ACTD/Various locations		0.213		0.250	Oct-03	0.250	Oct-04	Continuing	TBD	
Subtotal Support			0.000	0.213		0.250		0.250		Continuing	TBD	0.000
Remarks:												
<u>(U) Test &amp; Evaluation</u> AFOTEC		Military Utility Assessment/Nellis AFB, NV		0.116	N/A	0.100	N/A	0.200	N/A		0.416	
Subtotal Test & Evaluation			0.000	0.116		0.100		0.200		0.000	0.416	0.000
Remarks:												
<u>(U) Management</u> ASC/RAB		System Program Office/Dayton, OH		0.300	N/A	0.500	N/A	0.500	N/A		1.300	
Subtotal Management			0.000	0.300		0.500		0.500		0.000	1.300	0.000
Remarks:												
<u>(U) Total Cost</u>			0.000	2.438		11.441		8.196		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY  
07 Operational System Development

PE NUMBER AND TITLE  
0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE  
5038 Network Centric Collaborative Targeting

	Task Name	2003				2004				2005			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Continued Core Technology Development	████████████████████				████████████████████				████████████████████			
2	NCCT Systems Integration Lab Demo (Spiral 1)	██████											
3	Development of PIM	████████████████████				████████████████████				████████████████████			
4	PIM Installation and Testing Complete							██████					
5	JFEX (MUA) Preparation					████████████████████							
6	NCCT Military Utility Assessment Live Fly (Spiral 2)								██████				
7	FY05 Live Fly - Targeting Roving Sands												██████

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<b>Exhibit R-4a, RDT&amp;E Schedule Detail</b>	DATE <b>February 2004</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0305206F Airborne Reconnaissance Systems</b>	<b>PROJECT NUMBER AND TITLE</b> <b>5038 Network Centric Collaborative Targeting</b>
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	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) <b><u>Schedule Profile</u></b>			
(U) Continued Core Technology Development *	1-4Q	1-3Q	1-3Q
(U) NCCT Sytems Integration Lab Demo (Spiral 1)	1Q		
(U) Development of PIM *	1-4Q	1-3Q	1-3Q
(U) PIM Installation and Testing Complete		3Q	
(U) 3 Spiral JEFX Preparation		1-3Q	
(U) NCCT Military Utility Assessment Live Fly (Spiral 2)		4Q	
(U) FY05 Live Fly - Targeting Roving Sands			4Q
* - Development efforts suspend during JEFX04/MUA (4Q FY04)			

**Exhibit R-2a, RDT&E Project Justification**

DATE  
**February 2004**

BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>			PROJECT NUMBER AND TITLE <b>5092 JTC/SIL MUSE</b>		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5092 JTC/SIL MUSE	0.000	1.925	1.948	1.926	1.920	1.954	1.985	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

The Joint Technology Center/Systems Integration Laboratory Multiple UAV simulation Environment (JTC/SIL MUSE) BPAC was transferred from PE 0308601F to this program to better align it with JMIP programs and funding. For FY03 data see PE 0308601F, Modeling and Simulation.

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

The Joint Technology Center/Systems Integration Laboratory Multiple UAV Simulation Environment (JTC/SIL MUSE) provides simulations of UAVs/RPAs; their tactical and strategic reconnaissance uses and how their imagery products are used and disseminated within the DoD reconnaissance system. These simulations are utilized for the development of the Army's tactical UAV (TUAV), the Navy's vertical take off UAV (VTUAV), Air Force's Predator medium altitude endurance EUAV and the Air Force's Global Hawk high altitude endurance UAV/RPA.

This program is categorized as Budget Activity 7 because it provides for the development of technologies and capabilities in support of operational system development.

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

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Laboratory sustainment		0.367	0.367
(U) Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) development		1.008	1.081
(U) Maintenance, Licenses and equipment purchases		0.550	0.500
(U) Total Cost	0.000	1.925	1.948

FY03 dollars were executed from PE 0308601F.

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

	<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>Complete</u>	
(U) AF RDT&E									
(U) Other APPN									

The program receives approximately \$2.3M per year from the Army and approximately \$1.7M per year from the Navy, through FY09.

**(U) D. Acquisition Strategy**

All funding for JTC/SIL MUSE support sustainment operations; personnel (both government and contractor support), laboratory expenses, maintenance, licenses, equipment purchases and other expenses associated with operating and maintaining facilities. When contracts are required, they will be awarded after full and open competition.

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

DATE

**February 2004**

BUDGET ACTIVITY <b>07 Operational System Development</b>	PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>	PROJECT NUMBER AND TITLE <b>5092 JTC/SIL MUSE</b>
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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
	(U) <u>Product Development</u> JTC/SIL Subtotal Product Development Remarks: Prior to FY03 estimate for AF support only. FY03 was executed from PE 0308601F (\$1.953M)	MIPR	Huntsville, AL	8.000	0.000	1.925 Nov-03	1.948	Nov-04	1.948	Nov-04	Continuing	TBD
(U) Total Cost			8.000	0.000	1.925	1.948		1.948		Continuing	TBD	TBD

## Exhibit R-4, RDT&amp;E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance  
Systems

PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE



# JTC/SIL

- JTC/SIL MIPRs all dollars (AF, Army, Navy) to a headquarters contract where it is administered
- Due to the disbursement method JTC/SIL can not provide detailed data on which contracts or products AF only dollars are applied towards.

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<b>Exhibit R-4a, RDT&amp;E Schedule Detail</b>	DATE <b>February 2004</b>
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BUDGET ACTIVITY <b>07 Operational System Development</b>	PE NUMBER AND TITLE <b>0305206F Airborne Reconnaissance Systems</b>	PROJECT NUMBER AND TITLE <b>5092 JTC/SIL MUSE</b>
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(U) <u>Schedule Profile</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) MIPR dollars to Headquarters	1Q	1Q	1Q