

UNCLASSIFIED

PE NUMBER: 0305206F

PE TITLE: Airborne Reconnaissance Systems

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2005

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance Systems

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	71.281	60.921	51.769	52.659	54.658	56.730	58.305	59.227	Continuing	TBD
4818 Imaging and Targeting Support	11.199	12.489	14.677	15.616	16.657	17.126	17.870	18.176	Continuing	TBD
4819 Common Data Link (CDL)	42.178	36.295	34.350	35.563	36.289	37.980	38.873	39.541	Continuing	TBD
4882 Compass Bright	4.796	2.105	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5038 Network Centric Collaborative Targeting	11.229	8.101	0.966	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5092 JTC/SIL MUSE	1.879	1.931	1.776	1.480	1.712	1.624	1.562	1.510	Continuing	TBD

- In FY 2005, Project Number 674819, Common Data Link, \$6.1M congressional plus-up to support Software Communications Architecture (SCA) compliance.

- In FY 2006- 2009, Project Number 674882, Compass Bright, efforts will be transferred from PE0305206F, Airborne Reconnaissance Systems, to PE 0304260F, Airborne SIGINT Enterprise, Project 675185, in order to consolidate this SIGINT development effort with other AF SIGINT development efforts.

- In FY 2006, Project Number 675038, Network Centric Collaborative Targeting ACTD completes.

(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 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	77.930	55.464	58.581	59.394
(U) Current PBR/President's Budget	71.281	60.921	51.769	52.659
(U) Total Adjustments	-6.649	5.457		
(U) Congressional Program Reductions				
Congressional Rescissions	-0.893	-0.382		
Congressional Increases		6.100		
Reprogrammings	-5.756	-0.261		
SBIR/STTR Transfer				

(U) Significant Program Changes:

In FY06, \$5.254M was moved from Project 674882 (Compass Bright) to the PE 0304260F, Airborne SIGINT Enterprise.

In FY07, \$5.608M was moved from Project 674882 (Compass Bright) to the PE 0304260F, Airborne SIGINT Enterprise.

Exhibit R-2a, RDT&E Project Justification

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07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE

4818 Imaging and Targeting Support

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4818 Imaging and Targeting Support	11.199	12.489	14.677	15.616	16.657	17.126	17.870	18.176	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

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

The purpose of the Imaging and Targeting Support (I&TS) 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], 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. I&TS will increase interoperability amongst developed systems by developing common standards and tools. I&TS focuses on the following thrust areas:

Development and integration of common radar and electro-optical sensors (e.g., Synthetic Aperture Radar [SAR], Electro-Optical [EO], Infrared [IR], Hyperspectral [HSI], Laser Radar [LADAR]) 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 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Mission Support	1.211	1.211	1.322	1.368
(U) Continue efforts to transition HSI technology, such as the Spectral Infrared Imaging Technology Testbed (SPIRITT) sensor, into airborne reconnaissance platforms	6.638	6.618	8.205	7.310
(U) Continue image quality baselining and assessment efforts for airborne reconnaissance sensors.	1.600	1.500	2.150	3.250
(U) Continue development and delivery of tactical sensor models	1.500	2.160	3.000	3.188
(U) Continue develop and integrate complex Synthetic Aperture Radar (SAR) compression techniques	0.250	1.000	0.000	0.000
(U) Study to transition Automated Precise Positioning to airborne platforms	0.000	0.000	0.000	0.500

Project 4818

R-1 Shopping List - Item No. 198-3 of 198-26

Exhibit R-2a (PE 0305206F)

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Exhibit R-2a, RDT&E Project Justification

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07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

4818 Imaging and Targeting Support

(U) Total Cost					11.199	12.489	14.677	15.616
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(U) **C. Other Program Funding Summary (\$ in Millions)**

	<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>FY 2010</u>	<u>FY 2011</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	3.360	2.966	0.200	0.558	0.000	0.000	0.000	0.000	0.000	7.084
(U) (PE 63203F, AFRL)										
-Air Force Research Lab is contributing to the SPIRITT HSI sensor development.										

(U) **D. Acquisition Strategy**

Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods; including the use of Engineering Change Proposals (ECP) to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.

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Exhibit R-3, RDT&E Project Cost Analysis

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PROJECT NUMBER AND TITLE

4818 Imaging and Targeting Support

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &</u> <u>Type</u>	<u>Performing</u> <u>Activity &</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
BAE Systems (SPIRITT)	C/CPFF	Greenlawn, NY	6.900	6.600	Apr-04	6.146	Nov-04	8.205	Nov-05	6.300	Nov-06	Continuing	TBD	34.151
ITT Space Systems (Complex SAR Compression)	SS/CPFF	Linthicum Heights, MD	1.557	0.250	Aug-04	1.000	Dec-04	0.000		0.000		0.000	2.807	2.807
Eastman Kodak (Image Quality)	SS/CPFF	Rochester, NY	1.250	0.850	Apr-04	0.750	Nov-04	1.075	Nov-05	1.500	Nov-06	Continuing	TBD	8.175
General Dynamics (Image Quality)	SS/CPFF	Ann Arbor, MI	1.250	0.600	Apr-04	0.750	Nov-04	1.075	Nov-05	1.750	Nov-06	Continuing	TBD	8.175
General Dynamics (API/TRD)	SS/CPFF	Dayton, OH	0.670	1.030	Jan-04	0.965	Nov-04	1.000	Nov-05	1.000	Nov-06	0.000	4.665	4.500
Others	Various	Various		0.508		1.667	Feb-05	2.000		3.698		Continuing	TBD	10.842
Subtotal Product Development			11.627	9.838		11.278		13.355		14.248		Continuing	TBD	68.650
Remarks:														
(U) <u>Support</u>														
Other Gov't Orgs	Various	Various	Sep04	0.150	Sep-04							0.000	0.000	2.207
Subtotal Support			0.000	0.150		0.000		0.000		0.000		0.000	0.000	2.207
Remarks:														
(U) <u>Test & Evaluation</u>														
Prior	Various	Various	0.683									0.000	0.683	0.638
Subtotal Test & Evaluation			0.683	0.000		0.000		0.000		0.000		0.000	0.683	0.638
Remarks:														
(U) <u>Management</u>														
ASC (ITS)	Various	Wright Patterson, AFB	Oct03	1.211	Oct-03	1.211	Oct-04	1.322	Oct-05	1.368	Oct-06	Continuing	TBD	TBD
Subtotal Management			0.000	1.211		1.211		1.322		1.368		Continuing	TBD	TBD
Remarks:														
(U) Total Cost			12.310	11.199		12.489		14.677		15.616		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

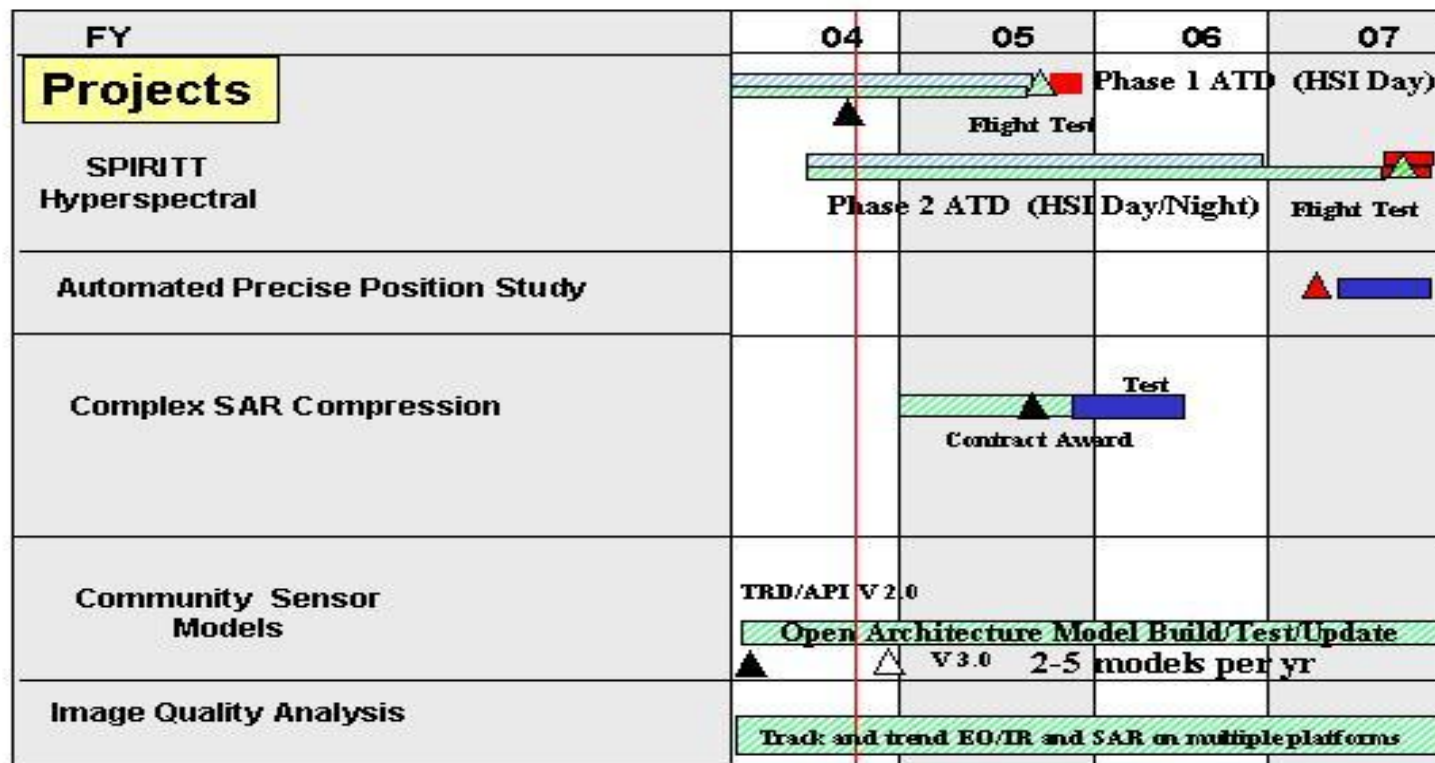
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BUDGET ACTIVITY
07 Operational System DevelopmentPE NUMBER AND TITLE
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U.S. AIR FORCE

I&TS Integrated Schedule

Rapidly delivering war-winning capability

Funded by Other PE

Funded by ITS Program

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Exhibit R-4a, RDT&E Schedule Detail

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**0305206F Airborne Reconnaissance
Systems**

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4818 Imaging and Targeting Support**(U) Schedule Profile**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) ITS: SPIRITT Enhanced ATD Contract Award	3Q			
(U) ITS: SPIRITT ATD Phase I Flight Test		4Q		
(U) ITS: SPIRITT ATD Phase II Flight Test				3Q
(U) ITS: Tactical Sensor Model Contract Award	3Q	1Q	1Q	1Q
(U) ITS: Tactical Sensor Model Deliveries		1-4Q	4Q	4Q
(U) ITS: Image Quality Contract Award	3Q			
(U) ITS: Image Quality Baseline for Global Hawk complete		3Q		
(U) ITS: Image Quality Baseline for Predator complete			3Q	
(U) ITS: Image Quality Baseline for TARS SAR complete				3Q
(U) ITS: Complex SAR Compression Contract Award		3Q		
(U) ITS: Complex SAR Compression Integration Test			2Q	
(U) ITS: Automated Precise Positioning Airborne Study Contact				1Q

Exhibit R-2a, RDT&E Project Justification

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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)

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4819 Common Data Link (CDL)	42.178	36.295	34.350	35.563	36.289	37.980	38.873	39.541	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

- FY05 \$6.1M Congressional Plus-up to support Software Communications Architecture (SCA) compliance.

(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. As the Executive Agent, the Air Force will oversee joint development of CDL systems and specifications. CDL will achieve interoperable communications by employing a Joint Tactical Radio System (JTRS) Software Communications Architecture (SCA) architecture based on previously and newly developed hardware, software, and waveforms that promote commonality among the services, NATO, and allies. As the CDL executive agent, the Air Force is responsible for managing these multi-service funds, 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 point-to-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. The effort will integrate commercial and other classified 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 development, technology development, system development and demonstration efforts support continuous improvements and implementation of line-of-sight and network Command and Control, Intelligence Surveillance and Reconnaissance (C2ISR) capabilities and the migration to software re-programmable cryptographic (COMSEC) equipment 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 lifecycle costs to the user. Interoperability provides for the exchange of data across service and agency boundaries. (Note: the term A-series refers to full rate/capability CDL systems and T-Series refers to Tactical Common Data Link (TCDL).

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 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(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.	14.649	16.720	19.949	22.581
(U) Continued 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.	4.448	0.178	0.111	0.000
(U) Continued configuration control of CDL architecture, standards, specification, and modules; provide for Joint-Service interoperability certification and spectrum management.	2.582	2.609	2.830	3.035
(U) Continued current development phase of COMSEC replacement and CDL transition to development of reprogrammable COMSEC.	0.145	0.270	0.295	3.540

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE			
07 Operational System Development	0305206F Airborne Reconnaissance Systems	4819 Common Data Link (CDL)			
(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 to include OSD mandates.	5.114	2.918	5.123	3.781	
(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), network centric communications, and Software Communications Architecture (SCA) development.	11.965	10.988	3.077	0.542	
(U) Continued NCCT ACTD wideband integrated common data link development.	0.500	1.000	1.000	0.000	
(U) Continued Ultra-wideband Airborne Laser Communications development. This is an FY04 Congressional Plus-up.	1.000	0.000	0.000	0.000	
(U) Provide CDL technical and engineering support.	1.775	1.612	1.965	2.084	
(U) Total Cost	42.178	36.295	34.350	35.563	

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

<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>FY 2010</u>	<u>FY 2011</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**

CDL funds are managed by various government laboratories and program offices to support new and on-going contracted development efforts in support of providing a common, interoperable wideband data link as mandated by ASD(NII) policy. CDL contracts are/were awarded under full and open competition.

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005		
BUDGET ACTIVITY 07 Operational System Development					PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems					PROJECT NUMBER AND TITLE 4819 Common Data Link (CDL)				
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2004 Cost</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> L-3 Communications	C & S; CPAF, CPFF, CPIF	Salt Lake City, UT	91.098	25.136	Oct-03	22.824	Nov-04	17.655	Nov-05	13.420	Nov-06	Continuing	TBD	TBD
Harris Corp	C & S; CPFF	Melbourne, FL	4.440	0.860	Mar-04	1.295	Nov-04	1.288	Nov-05	1.000	Nov-06	0.500	9.383	9.383
Trex	C; CPIF	San Diego, CA	6.400										6.400	6.400
SATCOM Interop/Global Grid/Other Govt Orgs	S; MIPR, CPIF	Multiple	7.992	0.070	May-04	0.015		0.000		3.000	Jan-07	7.283	18.360	18.345
L-3 COMCEPT	C; CPFF	Rockwall, TX	19.619	0.500	Sep-04	1.000	Jun-05	1.000	Jun-06				22.119	22.119
ITT	C; IDIQ	Beavercreek, OH	1.700	1.000	Mar-04								2.700	2.700
Cubic	C, CPFF	San Diego, CA	2.165	2.960	Dec-03	3.295	Nov-04	3.083	Nov-05	5.841	Nov-06	0.500	17.844	17.844
Other	S; MIPR, CPFF	Multiple	1.833	1.017	Nov-03								2.850	2.850
Subtotal Product Development			135.247	31.543		28.429		23.026		23.261		Continuing	TBD	TBD
Remarks:														
(U) <u>Support</u> Various	C & S; CPFF, MIPR	Multiple	15.329	7.779	Oct-03	5.181	Nov-04	5.925	Nov-05	7.071	Nov-06	Continuing	TBD	TBD
Subtotal Support			15.329	7.779		5.181		5.925		7.071		Continuing	TBD	TBD
Remarks:														
(U) <u>Test & Evaluation</u> JITC	MIPR	Fort Huachuca, AZ	2.242	1.281	Oct-03	0.500	Nov-04	1.160	Nov-05	0.910	Nov-06	Continuing	TBD	TBD
SATCOM	S; FFP	San Diego, CA	21.105										21.105	21.105
Subtotal Test & Evaluation			23.347	1.281		0.500		1.160		0.910		Continuing	TBD	TBD
Remarks:														
(U) <u>Management</u> Various	MIPR	Multiple	4.590	1.575	Oct-03	2.185	Oct-04	4.239	Oct-05	4.321	Oct-06	Continuing	TBD	TBD
Subtotal Management			4.590	1.575		2.185		4.239		4.321		Continuing	TBD	TBD
Remarks:														
(U) Total Cost			178.513	42.178		36.295		34.350		35.563		Continuing	TBD	TBD
Project 4819			R-1 Shopping List - Item No. 198-10 of 198-26										Exhibit R-3 (PE 0305206F)	

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY

07 Operational System Development

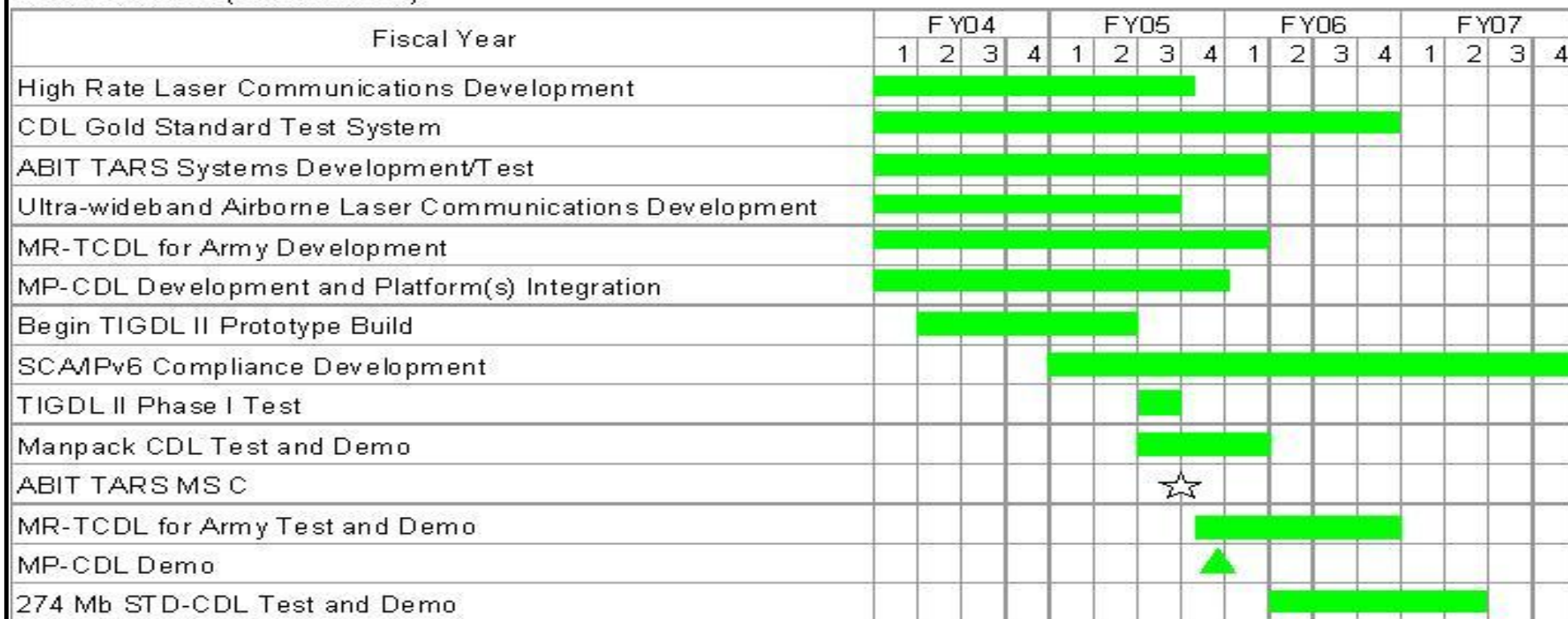
PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

4819 Common Data Link (CDL)

EXHIBIT R--2A (PE 0305206F)



Major Event or Milestone



Planned Ongoing Activity



Ongoing Activity that is Complete



Completed Event



Planned Task(s)



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Exhibit R-4a, RDT&E Schedule Detail			DATE	
			February 2005	
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT NUMBER AND TITLE	
07 Operational System Development	0305206F Airborne Reconnaissance Systems		4819 Common Data Link (CDL)	
(U) Schedule Profile	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) High Data Rate Laser Communications Development	1-4Q	1-4Q		
(U) CDL Gold Stand Test System	1-4Q	1-4Q	1-4Q	
(U) ABIT TARS Systems Development/Test	1-4Q	1-4Q	1Q	
(U) Ultra-wideband Airborne Laser Communications Development	1-4Q	1-3Q		
(U) MR-TCDL for Army Development	1-4Q	1-4Q	1Q	
(U) MP-CDL Development and Platform(s) Integration	1-4Q	1-4Q		
(U) Begin TIGDL II Prototype Build	2-4Q	1-2Q		
(U) SCA/IPv6 Compliance Development (A and T Series)		1-4Q	1-4Q	1-4Q
(U) TIGDL-II Phase I Test		3Q		
(U) Manpack CDL Test & Demo		3-4Q	1Q	
(U) ABIT TARS Milestone C		3Q		
(U) MR-TCDL for Army Test and Demo		4Q	1-4Q	
(U) MP-CDL Demo		4Q		
(U) 274 MB STD-CDL Test & Demo			2-4Q	1-2Q

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Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development					PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems			PROJECT NUMBER AND TITLE 4882 Compass Bright		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4882 Compass Bright	4.796	2.105	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) Beginning in FY06, all funding for Compass Bright is transferred from PE 0305206F, Project 674882, to the new PE 0304260F Airborne SIGINT Enterprise

(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.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue Compass Bright development projects in the signal intelligence (SIGINT) and radio frequency (RF) and measurement and signature intelligence (MASINT) areas	4.326	1.822		
(U) Mission Support, Program Management Activities	0.470	0.283		
(U) Total Cost	4.796	2.105	0.000	0.000

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

	<u>FY 2004</u> <u>Actual</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>FY 2010</u> <u>Estimate</u>	<u>FY 2011</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
PE 0304260F, Project 5185 -										
(U) Compass Bright Airborne SIGINT Development			0.392	8.157	8.366	8.596	8.829	9.011	Continuing	TBD

(U) Beginning in FY06, all funding for Compass Bright is transferred from PE 0305206F, Project 674882, to the new PE 0304260F Airborne SIGINT Enterprise

(U) **D. Acquisition Strategy**

On-going Compass Bright technology development and demonstration contracts will continue through existing laboratory relationships and other existing contractual vehicles with future development projects emphasizing full and open competition.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

4882 Compass Bright

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &</u> <u>Type</u>	<u>Performing</u> <u>Activity &</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
Various	TBD	AFRL	9.873	4.326	Jan-04	1.822							16.021	
Subtotal Product Development			9.873	4.326		1.822		0.000		0.000		0.000	16.021	0.000
Remarks:														
(U) <u>Management</u>														
ASC/RAJ				0.470		0.283							0.753	
Subtotal Management			0.000	0.470		0.283		0.000		0.000		0.000	0.753	0.000
Remarks:														
(U) Total Cost			9.873	4.796		2.105		0.000		0.000		0.000	16.774	0.000

Exhibit R-4, RDT&E Schedule Profile

DATE

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

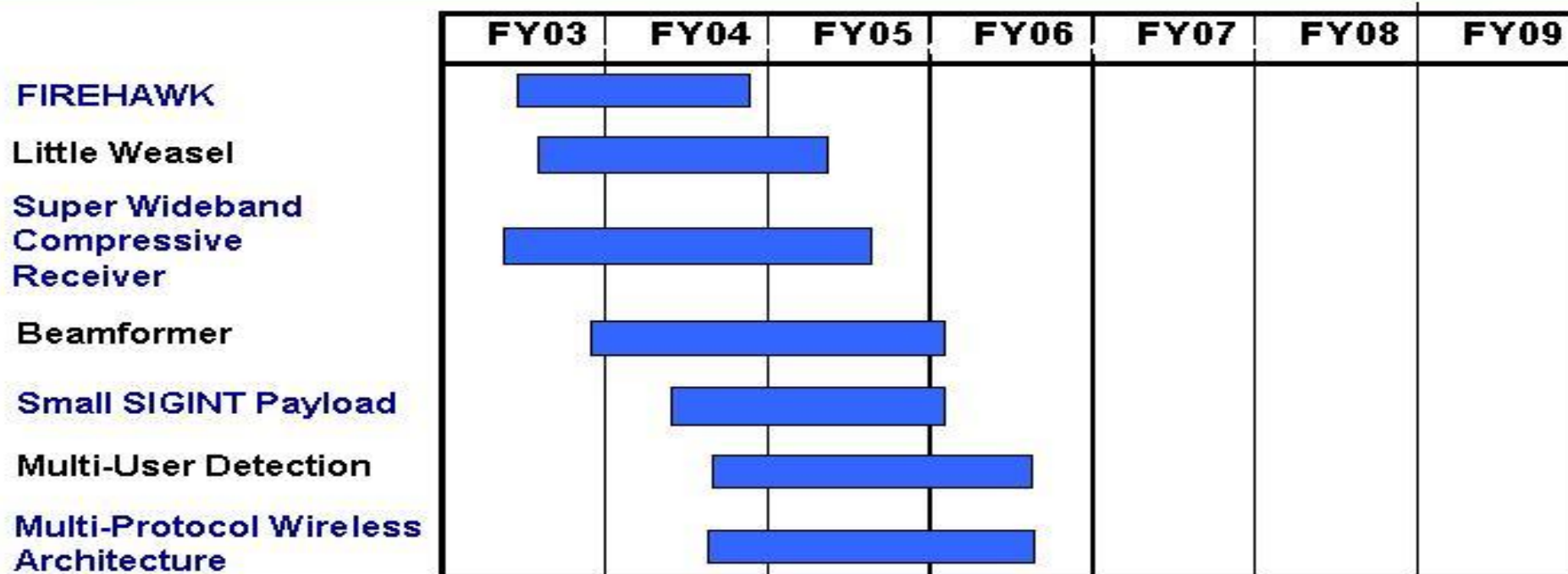
0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

4882 Compass Bright



COMPASS BRIGHT Project Schedules



Note1: COMPASS BRIGHT Projects are 1-2 years in duration, thus no outyear projects are shown

1

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Exhibit R-4a, RDT&E Schedule Detail

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

4882 Compass Bright

(U) **Schedule Profile**FY 2004FY 2005FY 2006FY 2007

(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 Proposal Call

3Q

(U) SUAVE-A Demo

4Q

(U) Superwide Band Compressive Receiver Flt Test

3Q

(U) Beamformer Flt Test

3Q

(U) Multi-User Detection Demo

2Q

(U) Multi-Protocol Wireless Architecture Demo

2Q

No new projects will be started in FY05 due to funding cut

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Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE

5038 Network Centric Collaborative Targeting

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5038 Network Centric Collaborative Targeting	11.229	8.101	0.966	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

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

The 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 were installed on AF platforms and system (RJ, JSTARS, and DCGS/U2) for demonstration during CY04 and CY05.

Based on the success of NCCT at JEFX04 and the positive Interim Military Utility Assessment conducted by AFOTEC, The Air Force is committed to execute FY05/06 funds to initiate fielding of NCCT. The FY05/06 desired funds accomplish tasks over and above those currently covered by NCCT funding across the FYDP. This decision has been endorsed by the CENTCOM/DJ3. NCCT and participating platforms (DCGS, Joint STARS, Rivet Joint and AOC) will receive additional funds to accomplish non-recurring engineering, prototype kits and installation to achieve initial fielding by FY06.

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 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U)				
(U) Complete development of NCCT core technology such as NCCT Network Controller, NCCT Communications Equipment, and NCCT Operations Interface for the ACTD.	6.588	4.551	0.966	
(U) Platform Integration Costs	3.791	2.600	0.000	
(U) Indirect Engineering Support	0.250	0.250	0.000	
(U) Test and Evaluation	0.100	0.200	0.000	
(U) Management	0.500	0.500	0.000	
(U) Total Cost	11.229	8.101	0.966	0.000

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

	<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>FY 2010</u>	<u>FY 2011</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) E-3 AWACS PE 0207417F	0.500								0.000	0.500

Exhibit R-2a, RDT&E Project Justification

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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) E-8 JSTARS PE 0207581F	0.500			0.000	0.500
(U) RC-135 PE 0305207F	1.000	1.000	0.100	0.000	2.100
(U) DCGS PE 0305208F					
(U) CDL PE 0305206F (Project 4819)	0.000	1.000	1.000	0.000	2.000
(U) OSD PE 0603750D	5.000	1.000	1.000	0.000	7.000
(U) Army Guardrail PE 0203744A	1.000	1.000	1.000	0.000	3.000
(U) Other APPN					

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

(U) **D. Acquisition Strategy**

ASC/RAB, Big Safari at Wright Patterson AFB, manages the Cost Plus Fixed Fee contract used to develop NCCT core technology and oversee system demonstration while 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.

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005		
BUDGET ACTIVITY 07 Operational System Development						PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems						PROJECT NUMBER AND TITLE 5038 Network Centric Collaborative Targeting		
(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2004 Cost</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>FY 2006 Cost</u>	<u>FY 2006 Award Date</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u> L-3 ComCept, Inc.	CPFF	Prime Contractor/Rockwall, TX		6.588	Oct-03	4.551	Oct-04	0.966	Oct-05			Continuing	TBD	11.994
Platform Specific Contractors	Various	Platform Integration/ Various		3.791	Oct-03	2.600	Oct-04	0.000					6.391	6.391
Subtotal Product Development Remarks:			0.000	10.379		7.151		0.966		0.000		Continuing	TBD	18.385
(U) <u>Support</u> Various Contractors	Various	Indirect engineering support to ACTD/Various locations		0.250	Oct-03	0.250	Oct-04	0.000					0.500	0.500
Subtotal Support Remarks:			0.000	0.250		0.250		0.000		0.000		0.000	0.500	0.500
(U) <u>Test & Evaluation</u> Various	Various	Military Utility Assessment/ Various locations		0.100		0.200		0.000					0.300	0.300
Subtotal Test & Evaluation Remarks:			0.000	0.100		0.200		0.000		0.000		0.000	0.300	0.300
(U) <u>Management</u> ASC/RAB		System Program Office/Dayton, OH		0.500		0.500		0.000					1.000	1.200
Subtotal Management Remarks:			0.000	0.500		0.500		0.000		0.000		0.000	1.000	1.200
(U) Total Cost			0.000	11.229		8.101		0.966		0.000		Continuing	TBD	20.385

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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

5038 Network Centric Collaborative
Targeting

	Task Name	2004				2005				2006			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Continued Core Technology Development												
2	Development of Platform Interface Module (PIM)												
3	PIM Installation and Testing Complete												
4	NCCT Military Utility Assessment												
5	CY05 Prep & Live Fly - Targeting Trident Warrior 05												

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Exhibit R-4a, RDT&E Schedule Detail

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

**0305206F Airborne Reconnaissance
Systems**

PROJECT NUMBER AND TITLE

**5038 Network Centric Collaborative
Targeting****(U) Schedule Profile**FY 2004FY 2005FY 2006FY 2007

(U) Continued Core Technology Development *

1-3Q

1-4Q

1-2Q

(U) Development of PIM *

1-3Q

1-4Q

1Q

(U) PIM Installation and Testing Complete

3Q

1-4Q

1Q

(U) NCCT Military Utility Assessment

4Q

4Q

1-2Q

(U) CY05 Prep & Live Fly - Targeting Trident Warrior

4Q

1Q

* - Development efforts suspended during JEFX04/MUA (4Q FY04) and FY05 Exercise (4QFY05) while technology is being tested/demonstrated.

Exhibit R-2a, RDT&E Project Justification

DATE

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5092 JTC/SIL MUSE	1.879	1.931	1.776	1.480	1.712	1.624	1.562	1.510	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

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

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) Multiple Unified Simulation Environment (MUSE) is a center of technical excellence to support all UAV programs within the services. The mission includes Service-specific and Joint ISR programs throughout DoD. The JTC/SIL provides a Government test bed for rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and C4I optimization. The cornerstone of its diverse tool set is the MUSE, which is the Departments' simulation/training system of choice for ISR systems, sensors, and platforms.

The Services and Warfighting Commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and CONOPS development, Tactics, Techniques, and Procedures (TTP) development and refinement, to conduct emerging concepts experimentation and C4I optimization within warfighting exercises and experiments.

The MUSE also creates a realistic operational environment that supports an embedded training capability for multiple Program Managers. These tools help to minimize acquisition and life cycle cost and schedule impacts. The MUSE provides the ability to conduct emerging concepts experimentation, future systems exploration, systems integration and technology insertion. The MUSE also has applications for Joint and Service-specific warfighter exercises and C4I optimization.

The MUSE is currently in use within all services and unified commands simulating PREDATOR, GLOBAL HAWK, HUNTER, Shadow 200 and PIONEER UAVs, national and commercial satellite collectors, P-3 and the U-2. During warfighting exercises, the JTC/SIL integrates realistic high-fidelity imagery simulations, emulating the C4I construct. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. Distributed training environments, virtually linking participants from various locations worldwide, are routinely supported within the MUSE architecture.

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 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Laboratory sustainment	0.367	0.367	0.367	0.367
(U) Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) development	1.012	1.064	0.909	0.613
(U) Maintenance, Licenses and equipment purchases	0.500	0.500	0.500	0.500
(U) Total Cost	1.879	1.931	1.776	1.480

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE

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

<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>FY 2010</u>	<u>FY 2011</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

The program receives approximately \$2.3 per year from the Army (PE 0305204A) and \$1.7M per year from the Navy (PE P0305204N) thru FY2009.

(U) **D. Acquisition Strategy**

All contracts are awarded after full and open competition and when situations dictate, via sole source.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &</u> <u>Type</u>	<u>Performing</u> <u>Activity &</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u> JTC/SIL	MIPR	Redstone Arsenal, Huntsville, AL	1.879	1.879	May-04	1.931	Nov-04	1.776	Nov-05	1.480	Nov-06	Continuing	TBD	TBD
Subtotal Product Development			1.879	1.879		1.931		1.776		1.480		Continuing	TBD	TBD
Remarks:														
(U) Total Cost			1.879	1.879		1.931		1.776		1.480		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

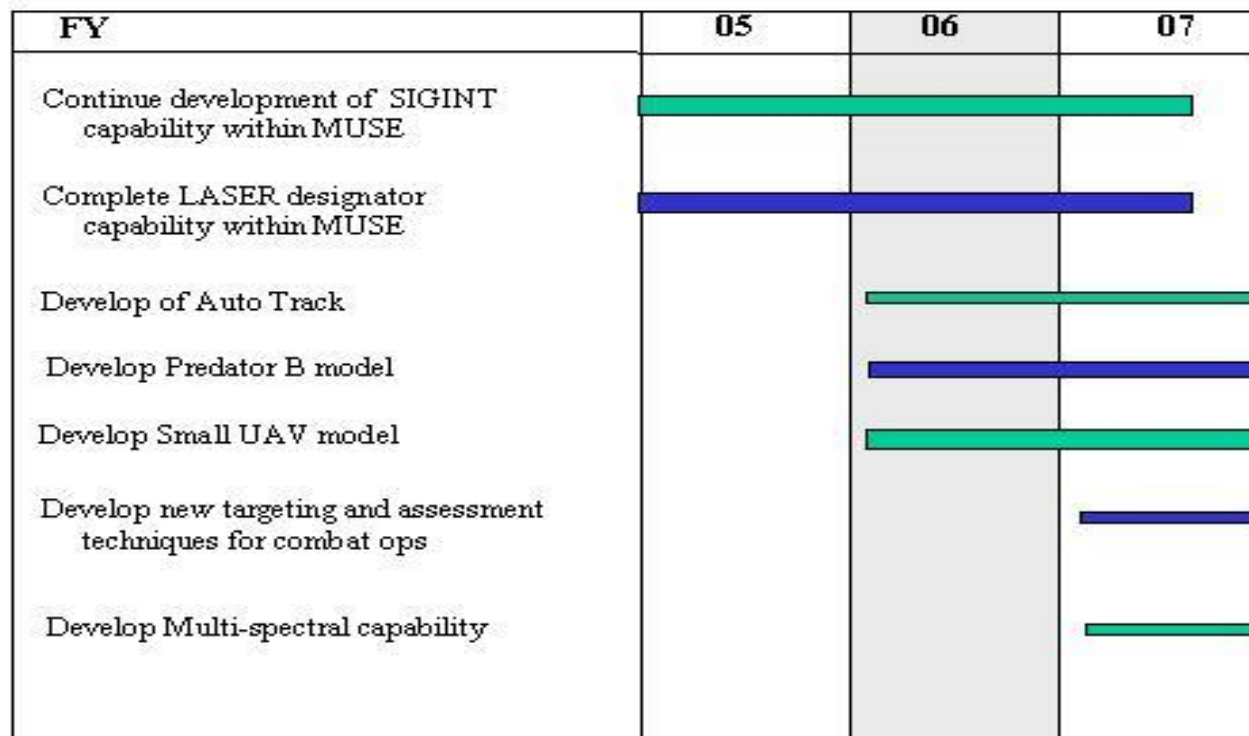
PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE



U.S. AIR FORCE

JTC/SIL Integrated Schedule

Rapidly delivering war-winning capability


Air Force dollars contribute to these Joint projects.

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Exhibit R-4a, RDT&E Schedule Detail

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305206F Airborne Reconnaissance
Systems

PROJECT NUMBER AND TITLE

5092 JTC/SIL MUSE

(U) **Schedule Profile**FY 2004FY 2005FY 2006FY 2007

(U) MIPR dollars to Redstone Arsenal

3Q

1Q

1Q

1Q