

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

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

07 - Operational System Development

0305206F Airborne Reconnaissance Systems

COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	123,538	136,221	136,913	105,398	142,410	151,187	125,433	Continuing	TBD
674817 Joint SIGINT Avionics Family (JSAF)	78,073	94,296	85,121	60,947	73,238	69,800	46,668	Continuing	TBD
674818 Advanced Technology	9,826	9,200	2,126	1,085	18,192	29,299	25,568	Continuing	TBD
674819 Common Data Link (CDL)	35,639	32,725	44,799	38,506	46,118	47,047	47,974	Continuing	TBD
674882 Compass Bright	0	0	4,867	4,860	4,862	5,041	5,223	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	Continuing	TBD

(U) A. Mission Description

This program funds and coordinates the development of advanced defense airborne reconnaissance technologies to ensure systems satisfy strategies and architectures to assure U.S. ability to support warfighter intelligence needs in the face of rapidly developing threat technology, proliferation of advanced weaponry, and uncertain political alignments. This program funds the development of the technologies that respond to evolving threats by emphasizing multi-service utility, interoperability among existing and planned complementary systems (i.e., sensors, ground systems, data links, and manned and unmanned platforms), and timely dissemination of intelligence information to operational forces.

(U) B. Budget Activity Justification

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

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

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2000 PBR)	126,402	124,608	136,591	TBD
(U) Appropriated Value	126,768	139,608		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-366	-1		
b. Small Business Innovative Research				

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(U) <u>C. Program Change Summary (\$ in Thousands) Continued</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
c. Omnibus or Other Above Threshold Reprogram		-749		
d. Below Threshold Reprogram	-2,173			
e. Rescissions	-691	-2,637		
f. Other				TBD
(U) Adjustments to Budget Years Since FY 2000 PBR			322	
(U) Current Budget Submit/FY 2001 PBR	123,538	136,221	136,913	TBD
(U) <u>Significant Program Changes:</u> Funding for U-2 Advanced Defensive Systems in FY01-03 was transferred to PE 0305202F, Dragon U-2. Funding for Compass Bright in FY01-05 was transferred from PE 0305206G into PE 0305206F.				

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems				PROJECT 674817			
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
674817	Joint SIGINT Avionics Family (JSAF)	78,073	94,296	85,121	60,947	73,238	69,800	46,668	Continuing	TBD	
<p>(U) <u>A. Mission Description</u> Provides funds for the development of sensor systems to modernize the SIGINT capability of the DoD airborne reconnaissance fleet, through a series of incremental upgrades, to meet the 2010 threat. Upgrades will embrace an open systems approach, with recognized standards, commonality, modularity, scalability, and reconfigurability. The incremental approach will ensure access to the latest technology as future budget year dollars become available. The open architecture will provide competitive opportunities to contractors who find innovative ways to use new technologies. It will also permit maximum use of commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) capabilities developed for other applications. The goal is full compliance with all CRD requirements and all Joint Airborne SIGINT Architecture (JASA) by 2010. The development and modification of the lead integration aircraft (EP-3E) for the initial JSAF modules will provide a mechanism to begin development and operational assessment of the JSAF components. Producing JSAF components will be provided for the airborne fleet (manned and unmanned) for integration on the Air Force's RC-135V/W (Rivet Joint), the Army's Aerial Common Sensor (ACS) platform, the Air Force's U-2, and the Navy's EP-3E.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$44,866 Continued Low Band SubSystem (LBSS) development and integration (U) \$16,908 Continued High Band SubSystem (HBSS) development and integration (U) \$2,190 Continued Rivet Joint Platform development and integration (U) \$7,830 Continued EP-3E Platform development and integration (U) \$2,040 Continued U-2 Platform development and integration (U) \$4,239 Continued SPO Operations, Systems Engineering, Program Management Activities (U) \$78,073 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$33,603 Continue Low Band SubSystem (LBSS) development and integration (U) \$20,324 Continue High Band Subsystem (HBSS) development (U) \$7,362 Continue Rivet Joint platform development for JSAF integration and testing (U) \$15,096 Continue EP-3 platform development for JSAF integration and testing (U) \$7,100 Continue U-2 platform development for JSAF integration and testing (U) \$1,000 Begin ACS platform development for JSAF integration and testing</p>											
Project 674817				Page 3 of 21 Pages				Exhibit R-2A (PE 0305206F)			

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674817
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(U) **A. Mission Description Continued**

(U) **FY 2000 (\$ in Thousands) Continued**

(U) \$3,022	Begin Active Interference Cancellation (IC) and Modeling & Simulation (M&S) Efforts
(U) \$2,200	Begin Near Term Follow-On-Program (FOP)
(U) \$4,589	Continue SPO Operations, Systems Engineering, Program Management Activities
(U) \$94,296	Total

(U) **FY 2001 (\$ in Thousands)**

(U) \$15,854	Continue Low Band SubSystem (LBSS) development and integration
(U) \$14,117	Complete High Band SubSystem (HBSS) development and integration
(U) \$2,542	Continue Rivet Joint platform development for JSAF integration and testing
(U) \$5,800	Continue EP-3 platform development for JSAF integration and testing
(U) \$7,869	Continue U-2 platform development for JSAF integration and testing
(U) \$3,500	Continue ACS platform development for JSAF integration and testing
(U) \$4,274	Continue Active Interference Cancellation (IC) and Modeling & Simulation (M&S) Efforts
(U) \$17,400	Begin Follow-On Program (FOP) development
(U) \$8,900	Begin JSAF Developmental Support Unit (DSU) development
(U) \$4,865	Continue SPO Operations, Systems Engineering, Program Management Activities
(U) \$85,121	Total

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

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

	<u>FY 1999</u>	<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>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**

The JSAF acquisition approach emphasizes full and open competition for the initial LBSS and HBSS development programs, as well as the FOPs that are planned at three year intervals beginning in 2001. A competitive source selection will be conducted for each new development effort. Estimated production costs will be a criteria for evaluation and determination of best value, thus providing justification for the follow-on sole source production contract. Although logistics support costs will not be a factor in best value determination for the initial HBSS and LBSS efforts due to the unknown variables of reliability, maintainability, mean time between failure, etc., of

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(U) **D. Acquisition Strategy Continued**
 newly developed hardware and software, the initial contractor logistics support (CLS) contract will be awarded sole source to the successful developer. This approach ensures the government receives the best value for each JSAF effort, while providing incentive to the winning development contractor. The open architecture will provide competitive opportunities during each development effort to contractors who find innovative ways to use new technologies, while permitting maximum use of commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) capabilities developed for other applications. With delivery of the core capability, the requirements community will agree on the next increment to be acquired - which will be competitively procured. The open systems architecture provides a vehicle for exploitation and integration of COTS and GOTS, allowing the government to refresh, upgrade, enhance and evolve its system capabilities. This follow-on, competitive effort is expected to run a 2 year development and 1 year test cycle.

(U) **E. Schedule Profile**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Engineering Milestones												
(U) LBSS System Deliveries							X	X	X			
(U) RJ LBSS Integration & Flight Test Begins							X					
(U) EP-3 LBSS Integration & Flight Test Begins								X				
(U) LBSS & HBSS Integration for U-2 Begins									X			
(U) U-2 LBSS Integration & Flight Test Begins											X	
(U) High Band Prototype (HBP) flight test complete; OCONUS deployment												*
(U) High Band SubSystem (HBSS) CDR												*
(U) HBSS Factory Acceptance Test (FAT)									X			
(U) U-2 HBSS Integration & Flight Test Begins											X	
(U) JSAF Production Begins (procurement funds in platform PEs)												X
(U) JSAF DSU Development Begins										X		
(U) JSAF Follow-On Program Begins								X				

* - Denotes completed event
 X- Denotes planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000				
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT			
07 - Operational System Development				0305206F Airborne Reconnaissance Systems				674817			
(U) A. Project Cost Breakdown (\$ in Thousands)											
						<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>	
(U)	Hardware Development					24,710		20,805		18,843	
(U)	Software Development					18,532		20,693		21,273	
(U)	Platform Integration					12,060		30,558		19,473	
(U)	Integration and Test Support					6,177		6,935		8,510	
(U)	Systems Engineering					12,355		10,716		12,157	
(U)	Program Management					4,239		4,589		4,865	
(U)	Total					78,073		94,296		85,121	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
	<u>Contractor or Government</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 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>											
	Sanders (LBSS)	CPAF	Feb 97	151,300	151,300	0	44,866	33,603	15,854	Continuing	TBD
	TRW (HBSS)	CPAF	Dec 97	54,700	54,700	0	16,908	20,324	14,117	Continuing	TBD
	TBD (FOP, DSU, Active IC; M&S)	TBD	FY00/01	TBD	TBD	0	0	5,222	30,574	Continuing	TBD
	Platform Integration (Includes AF, Army, Navy)		Various			0	12,060	30,558	19,711	Continuing	TBD
<u>Support and Management Organizations</u>											
	Various	Various	Various			0	4,239	4,589	4,865	Continuing	TBD
<u>Test and Evaluation Organizations</u>											
Note: Funds prior to FY99 are in PE 0305206D, Airborne Reconnaissance Advanced Development.											

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems				PROJECT 674818		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
674818	Advanced Technology	9,826	9,200	2,126	1,085	18,192	29,299	25,568	Continuing	TBD
<p>Note: Funding for U-2 Advanced Defense Systems transfers to PE 0305202F beginning in FY01.</p> <p>(U) <u>A. Mission Description</u> There are two primary objectives for the Advanced Technology funding: (1) To evaluate the utility and maturity of technology for airborne reconnaissance applications; and (2) To reduce the risk of employing emerging technologies in system upgrades, or new system acquisitions by integrating and exercising them in developmental and operational tests. These technologies address high priority collection requirements critical to the future of airborne reconnaissance systems. Specific priorities for development include increased geolocation accuracy, advanced sensor data fusion, and high data rate communications. This project also includes funding for U-2 Advanced Defensive Systems development in FY00. Near term development and feasibility demonstrations of specific technologies are conducted, followed by transition into production systems to support operational capabilities.</p> <p>* FY99 is understated by 55K. BTR not reflected in ABIDES database.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$2,865 High Data Rate Communications: Completed development of air-to-air lasercomm demonstration terminals. (U) \$1,561 Modeling and Simulation: Developed software process model of Tactical Intelligence ground systems. (U) \$2,900 SYERS P3I: Completed development and flight test of SYERS P3I sensor systems. (U) \$2,000 Moving Target Exploitation (MTE): Begin Phase 1 development of automatic target recognition and imaging capability. (U) \$500 Geolocation: Continued development of capability to coregister airborne imagery with national data bases. (U) \$9,826 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$100 Sensor Fusion: ATACCS (Airborne Targeting and Cross Cueing System) risk reduction activities to integrate U-2 IMINT/ELINT/MASINT collection systems (U) \$400 Geolocation: Continue development of coregistration of imagery in national data bases and application of advanced exploitation tools. (U) \$100 High Data Rate Communications: Continue evaluation of air-to-air lasercomm system (U) \$8,600 Advanced Defensive System: Initiate development of U-2 Defensive Systems and conduct risk reduction project (U) \$9,200 Total</p>										
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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674818
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(U) **A. Mission Description Continued**

(U) **FY 2001 (\$ in Thousands)**

- (U) \$145 Sensor Fusion: Continue analysis of ATACCS airborne processing, communication links and ground processing components and interfaces
- (U) \$1,500 Geolocation: Continue development and begin transition of enhanced geolocation capability to ground systems.
- (U) \$481 High Data Rate Communications: Complete air-to-air lasercomm evaluation
- (U) \$2,126 Total

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

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

	<u>FY 1999</u>	<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>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) PE 0305202F, Dragon U-2 (3600 RDT&E)	0	0	17,616	16,443	6,285	0	0		

(U) **D. Acquisition Strategy**

The program targets high payoff technologies to satisfy critical unmet airborne reconnaissance collection requirements. Funds are provided to begin development and insertion of these technologies, and to reduce risk associated with their implementation in production systems. Emphasis is placed on maximizing commercial and national development efforts and investment. Funds are provided to various government laboratories and program offices to conduct these technology development efforts. Multiple contracting methods are used including the use of Engineering Change Proposals (ECPs) to modify existing contracts. Contracts have been awarded both competitively and on a sole source basis.

(U) **E. Schedule Profile**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Sensor Fusion												
(U) - ATACCS Phase I Contract Award							X					
(U) - ATACCS Risk Reduction Demos												X
(U) Moving Target Exploitation (MTE)												
(U) - Begin Phase 1 MTE development					*							
(U) Modeling and Simulation												
(U) - Report Tactical GS simulation results					*							

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674818
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(U) **E. Schedule Profile Continued**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Geolocation												
(U) - Prototype deployed to support Operation Allied Force		*										
(U) - CDR						X						
(U) - Test Readiness Review							X					
(U) - Factory Acceptance Test											X	
(U) SYERS P3I												
(U) - Flight Test SYERS S/N 7				*								
(U) - Flight Test SYERS S/N 8					X							
(U) HDR Communications												
(U) - Laser Terminal Lab Test						X						
(U) U-2 Defensive Systems												
(U) - U-2 Advanced Defensive System (ADS) milestone 2						X						
(U) - ADS Phase 2 contract award						X						
*-Denotes completed event												
X-Denotes planned event												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000				
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT			
07 - Operational System Development				0305206F Airborne Reconnaissance Systems				674818			
(U) A. Project Cost Breakdown (\$ in Thousands)											
						<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>	
(U)	Hardware and Software Development					7,231		7,234		1,581	
(U)	Systems Engineering					400		140		295	
(U)	Contractor Engineering Support					1,611		900		150	
(U)	Government Engineering Support					584		926		100	
(U)	Total					9,826		9,200		2,126	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
<u>Contractor or</u>	<u>Contract</u>										
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>							
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>	
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>	
<u>Product Development Organizations</u>											
Raytheon	Various	ongoing	TBD	TBD	0	1,500			0	1,500	
Lockheed Martin Skunkworks	Various	ongoing	TBD	TBD	0	1,255			0	1,255	
Marconi Information Systems	FPLOE	18 Nov 96	TBD	TBD	0	475	380	1,425	Continuing	TBD	
Trex Enterprises	CPFF	9 Aug 96	TBD	TBD	0	1,920	50	100	0	2,070	
Veridian	CPFF	9 Aug 96	TBD	TBD	0	445	50	356	0	851	
Def Syst Contr	TBD	TBD	TBD	TBD	0	0	8,170	0	0	8,170	
Other	TBD	TBD	TBD	TBD	0	2,254	79	138	Continuing	TBD	
<u>Support and Management Organizations</u>											
Other Gov't Orgs	Multiple	Multiple	TBD	TBD	0	1,977	471	107	Continuing	TBD	
<u>Test and Evaluation Organizations</u>											
					<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>	
					<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>	
	<u>Subtotals</u>										
	Subtotal Product Development				0	7,849	8,729	2,019	TBD	TBD	
	Subtotal Support and Management				0	1,977	471	107	TBD	TBD	
	Subtotal Test and Evaluation										
	Total Project				0	9,826	9,200	2,126	TBD	TBD	

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems				PROJECT 674819		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
674819	Common Data Link (CDL)	35,639	32,725	44,799	38,506	46,118	47,047	47,974	Continuing	TBD
<p>(U) <u>A. Mission Description</u> 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 an architecture based on developed hardware, software, and waveforms to promote commonality among the Services. The CDL program will maintain design configuration commonality resulting in lower life-cycle costs. The CDL design will permit existing and future reconnaissance assets to operate worldwide, providing sensor data directly to ground sites 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 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 SIGINT, IMINT (including video), Multi-spectral and other data. Modular design allows for future technology insertion. The commonality of modular components reduces non-recurring engineering and life cycle costs to the DoD user. Interoperability provides for the exchange of data across service or agency boundaries.</p>										
<p>(U) <u>FY 1999 (\$ in Thousands)</u></p>										
(U)	\$3,317	Continued configuration control of CDL architecture, specifications and modules.								
(U)	\$4,045	Continued development of CDL and Tactical Common Data Link (TCDL) interface to additional platforms.								
(U)	\$3,140	Continued to assess development of commercial network interface standards and impact to CDL interface.								
(U)	\$8,501	Continued engineering and integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements.								
(U)	\$450	Began engineering and integration support of airborne reconnaissance platform requirements into National Space Communications Program.								
(U)	\$5,995	Completed covert waveform development/miniaturization/air-to-air link under the ABIT program.								
(U)	\$486	Continued SATCOM interoperability enhancements.								
(U)	\$5,325	Completed Tactical CDL flight demonstration.								
(U)	\$1,005	Continued transition to wideband bulk encryption on all CDL systems.								
(U)	\$3,375	Began development of Dual Data Link II (DDL-2) for the U-2								
(U)	\$35,639	Total								

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BUDGET ACTIVITY		PROJECT
07 - Operational System Development	0305206F Airborne Reconnaissance Systems	February 2000 674819
(U) <u>A. Mission Description Continued</u>		
(U) <u>FY 2000 (\$ in Thousands)</u>		
(U) \$12,050	Continue engineering/ integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements and studies and analysis of alternative satellite communications to support airborne reconnaissance relay requirements	
(U) \$2,500	Continue development of Tactical CDL demonstration hardware and flight demonstration and continue to develop design for operational suitability on Intelligence, Surveillance & Reconnaissance (ISR) platforms including Predator	
(U) \$4,000	Continue integration engineering of ABIT in ISR platforms including RC-135 and Global Hawk.	
(U) \$2,300	Continue to assess development of commercial network interface standards and incorporation of commercial technologies where practical to the CDL interface including Asynchronous Transfer Mode (ATM) on TCDL.	
(U) \$2,645	Continue configuration control of CDL architecture, specifications, and modules.	
(U) \$2,000	Continue development of link modifications to incorporate wideband bulk encryption.	
(U) \$530	Continue SATCOM interoperability enhancements.	
(U) \$2,500	Continue development of CDL and TCDL interface to additional platforms including Airborne Reconnaissance Low (ARL).	
(U) \$4,200	Continue development of Dual Data link upgrade for U-2.	
(U) \$32,725	Total	
(U) <u>FY 2001 (\$ in Thousands)</u>		
(U) \$17,728	Continue engineering and integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements and lease one additional transponder to support Predator and Global Hawk and studies/analysis of alternative satellite communications to support airborne reconnaissance relay requirements.	
(U) \$4,000	Continue development of Tactical CDL demonstration hardware and flight demonstration, and continue to develop design for operational suitability on ISR platforms including potential flight demonstrations on ARL, GUARDRAIL Legacy Replacement, P-3, EP-3, F/A-18 SHARP, VTUAV and Light Airborne Multi-Purpose System (LAMPS) and ATM interface upgrade.	
(U) \$5,129	Continue ABIT integration engineering of ABIT in ISR platforms including RC-135 and Global Hawk.	
(U) \$4,164	Continue to assess development of commercial network interface standards and incorporation of commercial technologies where practical to the CDL interface including upgraded U-2 sensors and Global Hawk SAR.	
(U) \$3,549	Continue configuration control of CDL architecture, specifications, and modules.	
(U) \$1,310	Continue development of link modifications to incorporate wideband bulk encryption.	
(U) \$1,500	Continue SATCOM interoperability enhancements.	
(U) \$5,419	Continue development of CDL interface to additional platform and surface terminal equipment (eg JSTARS, TARS, CHBDL) and advanced technology insertion activities	
Project 674819	Page 13 of 21 Pages	Exhibit R-2A (PE 0305206F)

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674819
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(U) **A. Mission Description Continued**

(U) FY 2001 (\$ in Thousands) Continued

(U) \$2,000 Continue development of DDL-2.
 (U) \$44,799 Total

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

None.

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

	<u>FY 1999</u>	<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>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**

The CDL involves a multitude of technology projects which will provide for a common, interoperable wideband data link standard that has been mandated by ASD/C3I policy. Program funds are leveraged with the Service program funds to satisfy project objectives. Funds are provided to various government laboratories and program offices to fund on-going technology efforts. The individual Services use Engineering Change Proposals (ECPs) and modify existing contracts that have been awarded both competitively and on a sole source basis to implement various technology efforts.

(U) **E. Schedule Profile**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Continue Commercial Satellite Transponder Leases	*				X				X			
(U) Complete Phase 2 Tactical CDL Flight Demo on Predator				*								
(U) Phase 2a Tactical CDL Dev. Program Complete on Predator								X				
(U) Begin TCDL modification for ARL		*										
(U) Field TCDL on ARL						X						
(U) Initial ABIT U-2 Testing Complete	*											
(U) Complete ABIT RC-135 Design					X							
(U) Initial RC-135 ABIT unit delivery						X						
(U) ABIT RC-135 Flight test									X			
(U) CDL/TARS Pod Integration Study				X								

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674819
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(U) **E. Schedule Profile Continued**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) ABIT Global Hawk Devel Study				X								
(U) Begin U-2 DDL 2 Development		*										
(U) U-2 DDL (U-2 Flight Test)									X			
(U) Begin TIGDL interface upgrade				*								

*-Denotes completed event
X-Denotes planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems				PROJECT 674819		
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>
(U)	Hardware and Software Development					14,211		11,483		13,408
(U)	Systems Engineering					4,567		3,237		4,771
(U)	Satellite Communications					8,501		12,050		17,728
(U)	Configuration Management					4,090		3,427		4,540
(U)	Contractor Engineering Support					3,451		1,930		3,321
(U)	Government Engineering Support					819		598		1,031
(U)	Total					35,639		32,725		44,799
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or</u>	<u>Contract</u>									
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
L3Com	Multiple	Multiple			0	14,405	10,727	15,211	Continuing	TBD
California Microwave	CPFF	Mar 99	TBD	TBD	0	2,000	1,250	500	Continuing	TBD
Harris Corp	Other	23 Jul 97	TBD	TBD	0	3,425	1,770	1,900	Continuing	TBD
	Transaction									
Motorola	Multiple	Multiple	TBD	TBD	0	1,005	2,000	1,310	Continuing	TBD
Other	Multiple	Multiple			0	642	748	1,649	Continuing	TBD
<u>Support and Management Organizations</u>										
COMSAT RSI	FFP	17 Jul 95			0	8,501	12,050	17,728	Continuing	TBD
Various	Multiple	Multiple			0	5,429	3,995	6,253	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
JITC	MIPR	FY99			0	232	185	248	Continuing	TBD

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE February 2000	
BUDGET ACTIVITY			PE NUMBER AND TITLE		PROJECT	
07 - Operational System Development			0305206F Airborne Reconnaissance Systems		674819	
	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development	0	21,477	16,495	20,570	TBD	TBD
Subtotal Support and Management	0	13,930	16,045	23,981	TBD	TBD
Subtotal Test and Evaluation	0	232	185	248	TBD	TBD
Total Project	0	35,639	32,725	44,799	TBD	TBD

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems				PROJECT 674882	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
674882 Compass Bright	0	0	4,867	4,860	4,862	5,041	5,223	0	0

(U) A. Mission Description

The COMPASS BRIGHT program develops advanced Air Force specific SIGINT capabilities to ensure that time-sensitive SIGINT collections against emerging and future target signals occur and reach the battle execution management centers fast enough to be of immediate value in the conduct of military operations.

Note: Funding in FY99 and FY00 are in National Security Agency PE 0305206G. FY01-05 funding was transferred to Air Force (PE 0305206F) from PE 0305206G.

(U) FY 1999 (\$ in Thousands)

(U) \$0 No Activity
(U) \$0 Total

(U) FY 2000 (\$ in Thousands)

(U) \$0 No Activity
(U) \$0 Total

(U) FY 2001 (\$ in Thousands)

(U) \$4,689 Continue COMPASS BRIGHT (NexGen Receiver, Active Interference Cancellation, other projects) development projects
(U) \$178 SPO operations, Program Management Activities
(U) \$4,867 Total

(U) B. Project Change Summary

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

	<u>FY 1999</u>	<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>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									

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT 674882
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(U) **D. Acquisition Strategy**
 The COMPASS BRIGHT program objective is to develop technologies for application in SIGINT 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.

(U) **E. Schedule Profile**

	<u>FY 1999</u>			<u>FY 2000</u>			<u>FY 2001</u>					
	1	2	3	4	1	2	3	4	1	2	3	4
(U) NextGen Receiver												
(U) -Digital Receiver Dev Complete										X		
(U) -LRM Dev Complete											X	
(U) - Integr & Test Complete											X	
(U) -Receiver Delivery												X
(U) Active Interference Cancellation												
(U) - Complete Prototype Testing										X		

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems			PROJECT 674882		
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>										
						<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>
(U)	COMPASS BRIGHT projects					0		0		4,689
(U)	SPO Operations/Program Management Activities					0		0		178
(U)	Total					0		0		4,867
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U) <u>Performing Organizations:</u>										
	<u>Contractor or</u>	<u>Contract</u>								
	<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>					
	<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
	<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>
										<u>Total</u>
	<u>Product Development Organizations</u>									
	Various	Various	Various	TBD	TBD	0	0	0	4,689	Continuing
	<u>Support and Management Organizations</u>									
	Various	Various	Various	TBD	TBD	0	0	0	178	Continuing
	<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>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>		<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>
										<u>Total</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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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
07 - Operational System Development		0305206F Airborne Reconnaissance Systems			674882	
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>
						<u>Total</u>
	<u>Subtotals</u>					<u>Program</u>
	Subtotal Product Development	0	0	0	4,689	TBD
	Subtotal Support and Management	0	0	0	178	TBD
	Subtotal Test and Evaluation					
	Total Project	0	0	0	4,867	TBD