

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001																																									
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System																																													
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost																																								
Total Program Element (PE) Cost	24,333	15,357	0	0	0	8,768	8,952	10,613	Continuing	TBD																																								
4754 COBRA BALL	10,977	15,357	0	0	0	8,768	8,952	10,613	Continuing	TBD																																								
4820 Sensor Development	13,356	0	0	0	0	0	0	0	Continuing	TBD																																								
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0																																								
<p>Funding for FY99-05 transferred to Air Force PE 0305207F from DARO Divestiture PE 0305207D. Funding for project 674820 in FY01-05 transferred to PE 0305202F in FY01. The title for BPAC 674820 changed from Manned Reconnaissance Systems U-2 to Sensor Development.</p> <p>FY03-FY07 budget numbers do not reflect the DoD strategic review results.</p> <p>(U) <u>A. Mission Description</u> The RDT&E portion of this PE supports development efforts required to enhance and sustain the RC-135 reconnaissance aircraft. The RDT&E efforts in this PE focus on sensor and safety of flight projects.</p> <p>(U) <u>B. Budget Activity Justification</u> The program is categorized as Budget Activity 7 because it provided for development of technologies and capabilities in support of operational system development</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table border="0"> <thead> <tr> <th></th> <th><u>FY 2000</u></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 2001 PBR)</td> <td>23,798</td> <td>0</td> <td></td> <td>TBD</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>24,388</td> <td>15,500</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional/General Reductions</td> <td>-460</td> <td></td> <td></td> <td></td> </tr> <tr> <td> b. Small Business Innovative Research</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> d. Below Threshold Reprogram</td> <td>500</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>	(U) Previous President's Budget (FY 2001 PBR)	23,798	0		TBD	(U) Appropriated Value	24,388	15,500			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions	-460				b. Small Business Innovative Research					c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogram	500			
	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>																																														
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									DATE June 2001		
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System					PROJECT 4754	
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
4754 COBRA BALL	10,977	15,357	0	0	0	8,768	8,952	10,613	Continuing	TBD	
FY03-FY07 budget numbers do not reflect the DoD strategic review results.											
<p>(U) <u>A. Mission Description</u></p> <p>Laser Ranging and Imaging System (LRIS) -- This project supports design studies, engineering analysis, non-recurring engineering, and other efforts associated with modifications to the RC-135 or its mission systems. The results of these efforts provide the requisite engineering necessary to implement modifications or provide a preliminary assessment of the technical feasibility, operability, or general military utility of an application. FY99 funds (Congressional plus-up) continues the Laser Ranging and Imaging system for the COBRA Ball platform and includes system testing in Maui. This project has been called the Field Laser Demonstration (FLD) and the Advanced Airborne Sensor (AAS) in past budget documentation. FY05 funds air traffic control and navigational safety non-recurring engineering for the RC-135 fleet.</p> <p>Multi-Function Self-Aligned Gate Technology (MSAG) -- Congress supports the development of the multi-function self-aligned gate active aperture antenna (AAA) technology for use on Reconnaissance aircraft. This system will provide wide-band, duplex, communications links simultaneously to a ground unit, other aircraft, and a satellite surrogate. This electronically steered array is a cost-effective solution to numerous DoD requirements.</p> <p>On-Board Pre-Processing (OBPP) -- The prototype pre-processing effort will develop the capability to screen the data as close to the collection source as possible and advise analysts which data requires immediate expert human intervention. The effort involves the development of an electronic support system and software development.</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <p>(U) \$3,977 LRIS (Continuation of Congressionally directed and funded program)</p> <p>(U) \$0 - \$2,400 Field Testing (LRIS)</p> <p>(U) \$0 - \$1,000 Integration of Acquisition Systems (LRIS)</p> <p>(U) \$0 - \$577 System Modification (LRIS)</p> <p>(U) \$3,000 Evaluate the MSAG AAA for use on the RC-135 as directed by Congress</p> <p>(U) \$4,000 On Board Preprocessor Prototype (OBPP - Congressionally added program)</p> <p>(U) \$0 - \$2,000 Electronic Support System (Prototype Preprocessor - Congressionally added)</p> <p>(U) \$0 - \$2,000 Preprocessing Software Development (Prototype Preprocessor)</p> <p>(U) \$10,977 Total</p>											
Project 4754			Page 3 of 11 Pages				Exhibit R-2A (PE 0305207F)				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE June 2001				
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System					PROJECT 4754				
(U) A. Mission Description Continued														
(U) FY 2001 (\$ in Thousands)														
(U) \$5,966 LRIS (Continuation of Congressionally directed and funded program)														
(U) \$9,391 ECARs (Start of FY01 Congressional add)														
(U) \$15,357 Total														
(U) FY 2002 (\$ in Thousands)														
(U) \$0 No Activity														
(U) \$0 Total														
(U) B. Project Change Summary														
Added the Multi-Function Self-Aligned Gate Technology and On-Board Pre-Processing effort to FY00.														
(U) C. Other Program Funding Summary (\$ in Thousands)														
		<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>			
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>				
(U)	APPN 10,APAF, Line 56	234,385	159,501	188,630	125,719	77,274	83,743	76,250	77,885	Continuing		TBD		
(U) D. Acquisition Strategy														
The RC-135 development and enhancement activities are managed by the Air Force through the BIG SAFARI program in the Reconnaissance System Program Office. These projects are managed by ASC/RA and provide technical oversight and management of all aircraft, ground and support system modifications, integration and flight test engineering responsibility, product assurance and acceptance testing, and logistics and training activities. Aircraft, aircraft sensor systems, and associated ground support system modifications planned for FY02-FY07 include the procurement, fielding and logistical support for three distinct RIVET JOINT baseline configurations [baseline 7, 8 ,9] and two distinct baselines [baselines 2 & 3] for COMBAT SENT. Additional information is available within the classified Congressional budget exhibits.														
(U) E. Schedule Profile														
			<u>FY 2000</u>					<u>FY 2001</u>				<u>FY 2002</u>		
			1	2	3	4	1	2	3	4	1	2	3	4
(U)	Prototype Delivery (LRIS)			*										
(U)	Engineering Analysis Report (MSAG)							*						
(U)	Electronic Support System (OBPP)						*							
(U)	Software Prototype (OBPP)							*						
Project 4754		Page 4 of 11 Pages						Exhibit R-2A (PE 0305207F)						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE June 2001				
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System					PROJECT 4754				
(U) E. Schedule Profile Continued														
		<u>FY 2000</u>					<u>FY 2001</u>					<u>FY 2002</u>		
		1	2	3	4	1	2	3	4	1	2	3	4	
* - Denotes completed event														
X - Denotes planned event														
Project 4754				Page 5 of 11 Pages				Exhibit R-2A (PE 0305207F)						

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001			
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System			PROJECT 4754		
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 2000</u>		<u>FY 2001</u>		<u>FY 2002</u>
(U)	System Design and Analysis					3,000		7,207		
(U)	Fabrication and Test					5,977		3,000		
(U)	Integration and Support					2,000		5,150		
(U)	Total					10,977		15,357		
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or Government</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>										
ASC/RAB	Multiple	Aug 97	N/A	N/A	4,795	10,977	15,357		Continuing	TBD
<u>Support and Management Organizations</u>										
<u>Test and Evaluation Organizations</u>										
					<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Subtotals</u>										
Subtotal Product Development					4,795	10,977	15,357		TBD	TBD
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project					4,795	10,977	15,357		TBD	TBD

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									DATE June 2001		
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305207F Manned Reconnaissance System					PROJECT 4820	
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
4820 Sensor Development	13,356	0	0	0	0	0	0	0	Continuing	TBD	
<p>Note: FY01 and future year funds transferred to PE 0305202F. This project was formerly titled Manned Reconnaissance Systems U-2.</p> <p>FY03-07 budget numbers do not reflect DoD's strategic review results.</p> <p>(U) <u>A. Mission Description</u> This development project supports high payoff improvements to the U-2 sensors such as the Advanced Synthetic Aperture Radar System (ASARS-2) and the SENIOR YEAR Electro-optical Reconnaissance System (SYERS).</p> <p>The ASARS-2 Improvement Program (AIP) improves area search, precision geolocation, and image quality characteristics sufficiently to directly support the targeting of precision guided munitions (PGMs). Complex imagery will be produced by the AIP system and support significant exploitation products for the imagery analysts. AIP champions the introduction of Asynchronous Transfer Mode (ATM) datalink formats to the ISR community and supports National Imagery Transmission Format (NITF) standards. Several Line Replaceable Units (LRU) including the Process Control Unit (PCU), Receiver Exciter Controller (REC), and transmitter are approaching the end of their supportability life. Requirements include ASARS-2 reliability improvements/corrections and exploitation tools for the user (for example, system robustness, dual data link (DDL), beyond line of sight (BLOS), image quality, ground moving target indication (GMTI), Moving Target Exploitation (MTE) trackers, coherent change detection (CCD), electronic counter countermeasures (ECCM), antenna replacements, super resolution, REC upgrades, intelligence bandwidth compression (IBC), and interferometric SAR (IFSAR)). Developing new LRUs with next generation technology will make ASARS-2 supportable through the expected service life of the U-2 and provide capability enhancements necessary to support PGMs.</p> <p>The SYERS Preplanned Product Improvement (SYERS P3I) program includes upgrades such as multi-spectral collection and processing, polarization collection and processing, possible hyperspectral collection and processing, and the associated exploitation tools for the user. SYERS P3I also includes reliability and maintainability upgrades to incorporate next generation technology, maintaining and enhancing system supportability.</p> <p>Improvements to ASARS-2 and SYERS are transferable to Global Hawk High Altitude Endurance Unmanned Aerial Vehicles (HAE UAV) should migration of this improvement become a requirement.</p> <p>Also, this project accomplishes the development of a quick reaction capability (QRC) to improve the U-2 electronic warfare system (EWS) capability for Southwest Asia. Lastly this project includes funds from FY99 congressional additions to develop cockpit display improvements, conduct risk reduction studies for aircraft fuel</p>											
Project 4820			Page 7 of 11 Pages				Exhibit R-2A (PE 0305207F)				

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE June 2001																														
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
07 - Operational System Development	0305207F Manned Reconnaissance System	4820																														
<p>(U) <u>A. Mission Description Continued</u> conversion and complete reliability and maintainability upgrades and initial spares procurement for the SENIOR GLASS system.</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">(U) \$4,000</td> <td>Develop DDL II and interface to AIP (Congressionally added effort)</td> </tr> <tr> <td>(U) \$502</td> <td>Continued development of AIP on-board processor</td> </tr> <tr> <td>(U) \$1,000</td> <td>Continued development of AIP range migration software</td> </tr> <tr> <td>(U) \$1,172</td> <td>Common Exploitation Tools</td> </tr> <tr> <td>(U) \$475</td> <td>SPO Support (AIP)</td> </tr> <tr> <td>(U) \$636</td> <td>Begin beyond line of sight (BLOS) data link interface integration (AIP &SYERS)</td> </tr> <tr> <td>(U) \$225</td> <td>Begin radar transmitter development (AIP)</td> </tr> <tr> <td>(U) \$75</td> <td>Develop AIP employment concept scenarios</td> </tr> <tr> <td>(U) \$421</td> <td>Onboard Processor Environmental testing & improvement</td> </tr> <tr> <td>(U) \$4,850</td> <td>U-2 QRC defensive system development</td> </tr> <tr> <td>(U) \$13,356</td> <td>Total</td> </tr> </table> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">(U) \$0</td> <td>Funding transferred to PE 0305202F</td> </tr> <tr> <td>(U) \$0</td> <td>Total</td> </tr> </table> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">(U) \$0</td> <td>Funding transferred to PE 0305202F</td> </tr> <tr> <td>(U) \$0</td> <td>Total</td> </tr> </table> <p>(U) <u>B. Project Change Summary</u> FY00 Congressional adds: Dual Data Link upgrade (\$3.5M)</p> <p>FY01 - Air Force reprogramed \$4.595M of Electronic Warfare System (EWS) RDT&E funding to procurement.</p>			(U) \$4,000	Develop DDL II and interface to AIP (Congressionally added effort)	(U) \$502	Continued development of AIP on-board processor	(U) \$1,000	Continued development of AIP range migration software	(U) \$1,172	Common Exploitation Tools	(U) \$475	SPO Support (AIP)	(U) \$636	Begin beyond line of sight (BLOS) data link interface integration (AIP &SYERS)	(U) \$225	Begin radar transmitter development (AIP)	(U) \$75	Develop AIP employment concept scenarios	(U) \$421	Onboard Processor Environmental testing & improvement	(U) \$4,850	U-2 QRC defensive system development	(U) \$13,356	Total	(U) \$0	Funding transferred to PE 0305202F	(U) \$0	Total	(U) \$0	Funding transferred to PE 0305202F	(U) \$0	Total
(U) \$4,000	Develop DDL II and interface to AIP (Congressionally added effort)																															
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(U) \$0	Total																															
Project 4820	Page 8 of 11 Pages	Exhibit R-2A (PE 0305207F)																														

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE June 2001
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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305207F Manned Reconnaissance System	PROJECT 4820
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(U) **C. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) AF RDT&E PE 0305202 AIP	0	32,248	32,804	13,965	1,951	1,948	1,989	2,031		TBD
(U) AIP Production* (APAF**) PE 0305207	27,287	0	0	0	0	0	0	0	0	27,287
(U) AIP Production PE 0305202	0	18,173	9,001	9,049	9,320	1,605	0	0	0	TBD

* First Upgraded Radar Transmitter/Antenna Deliveries in 3QFY03
 ** APAF production funding shown in PE 0305202F FY01-07

(U) **D. Acquisition Strategy**
 For airborne collection capability upgrades, modify existing platform and associated ground control equipment via Engineering Change Proposals (ECPs)/Task Orders to existing USAF contracts. Develop an electronic defensive system QRC capability, then deploy and sustain on U-2 aircraft in Southwest Asia. For ASARS-2, develop and test new technology line replaceable units (LRU's) for subsequent retrofit into the U-2's, this may be performed during normal operations, U-2 Programmed Depot Maintenance (PDM), or during other ongoing U-2 modifications.

(U) **E. Schedule Profile**

	<u>FY 2000</u>			<u>FY 2001</u>			<u>FY 2002</u>					
	1	2	3	4	1	2	3	4	1	2	3	4
(U) -AIP Prototype Flight Test completion		*										
(U) -AIP Production Flight Test completion				*								
(U) -QRC Ground Test												X
(U) -QRC Flight Test												X
(U) -QRC IOC												X
(U) -AIP interface to DDL-II										X		

*- Denotes Completed Event
 X-Denotes planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001				
BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305207F Manned Reconnaissance System				PROJECT 4820			
(U) A. Project Cost Breakdown (\$ in Thousands)											
					<u>FY 2000</u>		<u>FY 2001</u>			<u>FY 2002</u>	
(U)	Primary Hardware Development				6,918		0				
(U)	Software Development				5,223		0				
(U)	Government Engineering Support				400		0				
(U)	System Testing				815		0				
(U)	Total				13,356		0				
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
	<u>Contractor or Government</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
		<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>											
	Raytheon (AIP & SENIOR GLASS)	CPIF	3Q96	N/A		0	5,176	0		Continuing	TBD
	L3Comm (AIP interface to DLL-II)	CPIF	3Q96	N/A		0	2,250	0		0	2,250
	Lockheed Martin (Cockpit)			N/A		3,000	0	0		0	3,000
	AFRL (Fuel Conversion)			N/A		1,300	0	0		0	1,300
	LM Sander (QRC)			N/A		9,537	5,321	0			14,858
<u>Support and Management Organizations</u>											
	ASC/RAP/AFRL					0	330			0	330
<u>Test and Evaluation Organizations</u>											
	WR-ALC/LR - Site 2, Edwards AFB					0	279			0	279
* See PE 0305202F for completion data.											

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE June 2001		
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
07 - Operational System Development		0305207F Manned Reconnaissance System			4820	
	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development	13,837	12,747	0		TBD	TBD
Subtotal Support and Management	0	330			0	330
Subtotal Test and Evaluation	0	279			0	279
Total Project	13,837	13,356	0		TBD	TBD