PE TITLE: Dragon U-2 (JMIP)

PE NUMBER: 0305202F

	RDT&E BUDGET ITEM	JUSTI	FICATI	ON SH	EET (R	-2 Exhi	bit)		DATE	Februar	y 2003
	T ACTIVITY Operational System Development				UMBER AND 15202F		J-2 (JMII	P)			
	COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	30,348	23,586	52,518	59,975	30,343	9,831	9,971	10,107	Continuing	TBD
4820	Sensor Development	14,657	16,726	47,500	59,975	30,343	9,831	9,971	10,107	0	17,454
4945	High Altitude Subsystems	15,691	6,860	5,018	0	0	0	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	27,099

^{1.} In FY02, the U-2 program received \$79.5M as part of the Defense Emergency Response Fund (DERF). Funding was used for Counter-Terrorism activities in support of Operation Enduring Freedom. This funding is not reflected in the FY02 program total.

- 2. In FY03, the U-2 program received \$13.5M in DERF Transfer. Also, the FY03 Appropriations bill cut \$7.0M, later identified as a cut from signals intelligence (SIGINT) funds.
- 3. The following funds were added to project 4820 for the development of a common/scalable modernized SIGINT system (Airborne Signals Intelligence Payload -- ASIP) for both the U-2 and Global Hawk (PE 0305205F Endurance Unmanned Aerial Vehicles, project 4799): FY04 \$16M; FY05 \$25M; FY06 \$17M.
- 4. The following ASIP funds will be administratively transferred to the Distributed Common Ground System (DCGS) Program Element for DCGS/U-2 ASIP integration. FY03: \$0.2M; FY04: \$0.9M; FY05: \$2.2M; FY06: \$1.1M

(U) A. Mission Description

The RDT&E portion of this program element funds efforts required to enhance and sustain the U-2 Dragon Lady reconnaissance aircraft. The RDT&E efforts in this PE focus on sensor and safety of flight projects. In addition to the RDT&E funding there are procurement funds associated with these developments.

(U) B. Budget Activity Justification

This program element is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development for the U-2 aircraft.

Page 1 of 12 Pages

Exhibit R-2 (PE 0305202F)

	RDT&E BUDGET ITEM JUSTIFIC	CATION SHEET (R-2 Exhib	oit)	_{DATE} Febru	ary 2003
	GET ACTIVITY	PE NUMBER AND TITLE 0305202F Dragon U	•		,
	Operational System Development	USUSZUZF Dragon U	J-Z (JIVIIP)		
U)	C. Program Change Summary (\$ in Thousands)				
		FY 2002	FY 2003	FY 2004	Total C
J)	Previous President's Budget	32,804	17,442	4,344	TI
J)	Appropriated Value	30,804	23,942		
J)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-456	-7,000		
	b. Small Business Innovative Research		100		
	c. Omnibus or Other Above Threshold Reprogram		-103		
	d. Below Threshold Reprogram		252		
T \	e. Rescissions		-253	40.154	
J)	Adjustments to Budget Years Since FY 2003 PBR	20.240	7,000	48,174	T)
J)	Current Budget Submit/FY 2004 PBR	30,348	23,586	52,518	TE
	In FY03, the U-2 program received \$13.5M in DERF Transfer. (SIGINT) funds. In FY04, the U-2 program received \$27.2M for signal intelligence intelligence payload (ASIP).			Ţ.	J

Exhibit R-2 (PE 0305202F)

RDT&E BUDGET ITEM													
BUDGET ACTIVITY 07 - Operational System Development		PE NUMBER AND TITLE 0305202F Dragon U-2 (JMIP)								PROJECT 4820			
COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost			
4820 Sensor Development	14,657	16,726	47,500	59,975	30,343	9,831	9,971	10,107	0	17,454			

Budget Activity Justification - This program element is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development for the U-2 aircraft.

(U) A. Mission Description

This development project supports high payoff improvements to the U-2 sensors such as the Advanced Synthetic Aperture Radar System (ASARS-2A), the SENIOR YEAR Electro-optical Reconnaissance System (SYERS) 2 Improvement Program, RF Int programs, and the Airborne Signals Intelligence Payload (ASIP). The ASIP program will design, develop, and integrate a common/scalable modernized signals intelligence (SIGINT) system for both the U-2 and Global Hawk (PE 0305205F Endurance Unmanned Aerial Vehicles, project 4799).

The ASARS-2A Program improves area search, precision geolocation, and image quality to support predision guided munitions targeting. The system produces complex imagery, enabling enhanced exploitation methods. ASARS-2A introduces Asynchronous Transfer Mode (ATM) datalink formats to the ISR community and supports National Imagery Transmission Format (NITF) standards. Requirements include ASARS-2A 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), Receiver Exciter Controller (REC) upgrades and software upgrades.

The SYERS-2 Improvement 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-2 also includes reliability and maintainability upgrades that incorporate next generation technology to maintain and enhance system supportability. SYERS Polarimetric Improvement (SYERS P4I) investigates the potential for using polarimetric collection data to find man-made objects on the battlefield.

The RF Int Enhancements Program (e.g. NILEDRIVE, QUICKNOTCH, ALF Upgrade, and EAU Upgrade) maintains present capability by developing replacements for current components affected by diminishing manufacturing sources as well as enhancing capability to exploit evolving signals of interest. Also, we are examining the possibility of modifying current systems to allow them to function on Power/Electromagnetic Interference compatible U-2s.

These sensors are being converted to the ATM standard to address vanishing vendor issues and to optimize signals intelligence bandwidth allocation.

The ASIP Program will design, develop and build a common/scalable low-band subsystem and will integrate it with the High Band Sub-System (HBSS). The ASIP will

Project 4820 Page 3 of 12 Pages Exhibit R-2A (PE 0305202F)

	RDT&E	BUDGET ITEM JUSTIFICA	TION SHEET (R-2A Exhibit)	DATE February 2003
	GET ACTIVITY Operational Sys	tem Development	PE NUMBER AND TITLE 0305202F Dragon U-2 (JMIP)	PROJECT 4820
(U)	A. Mission Description be fielded on the U-2 a			
(U)	FY 2002 (\$ in Thousan	nds)		,
(U)		Accomplishments/Planned Program		,
(U)	·	Continue ASARS-2A Interface to Dual Data	Link (DDL-II)	
(U)			vement (IQI) Software/Hardware Development and System Ro	bustness Improvements
(U)		Image Chain Analysis	The state of the s	r
(U)		ASARS-2A Flight Test		
(U)		RF-INT Enhancements		
(U)	. ,	SYERS Polarimetric Development (SYERS	P4I)	
(U)		Mission Support	,	
(U)		Total		
(U)	FY 2003 (\$ in Thousan	nds)		
(U)	\$0	Accomplishments/Planned Program		
(U)	\$3,726	Continue ASARS-2A IQI Software/Hardwar	re Development Tasks and System Robustness Improvements	
(U)	\$6,500	RF-INT Enhancements		
(U)	\$6,500	Signals Intelligence (SIGINT) Sensor Devel	opment/Integration (Airborne Signals Intelligence Payload, (A	ASIP))
(U)	' /	Total		
		ram received \$13.5M in DERF Transfer. Als	so, the FY03 Appropriations bill cut \$7.0M, later identified as	a cut from signals intelligence
	(SIGINT) funds.			
(U)	FY 2004 (\$ in Thousan	<u>nds</u>)		
(U)	\$0	Accomplishments/Planned Program		
(U)	\$4,173	Continue ASARS-2A IQI Tasks		
(U)	\$27,200	SIGINT Sensor Development/Integration (A	ASIP)	
(U)	\$16,127	Collaborative SIGINT Sensor (ASIP)		
(U)	\$47,500	Total		
			(SIGINT) sensor development/integration and \$16.1M for col-	laborative SIGINT airborne signals
	intelligence payload (A	ASIP).		
D	roject 4820		Page 4 of 12 Pages	Exhibit R-2A (PE 0305202F)

	RDT&E BUD	GET IT	EM JUS	TIFICAT	TON SH	EET (R-	2A Exhi	bit)		Februar	y 2003
	GET ACTIVITY Operational System D	evelopm	ent			NUMBER ANI 805202F	TITLE Dragon U	-2 (JMIP)			PROJECT 4820
(U)	B. Project Change Summary Not Applicable										
(U)	C. Other Program Funding S	ummary (\$	in Thousand	ls)							
		FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to	Total Cost
		<u>Actual</u>	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	<u>Complete</u>	
(U)	APAF, Manned Recce, 0305202F - ASARS-2A Production	2,977	3,032	1,212	1,653	2,725	3,820	3,657	3,758	0	22,834
(U)	APAF, 0305202F - SYERS-2 - Production	2,784	1,814	888	813	861	711			0	7,871
(U)	RDT&E, 0305205F - ASIP Development		61,000	56,300	32,500	36,300	11,700			0	197,800
(U)	APAF, 0305205F - ASIP Production					21,000	91,400	51,200	51,400	Continuing	Continuing
(U)	APAF, 0305202F - ASIP Production				10,000	25,400				0	35,400
(U)	Other, 0305202F - SIGINT Enhancements	20,000									20,000
(U)	RDT&E, 0305206F, SYERS-2		2,000								2,000
(U)	D. Acquisition Strategy For airborne collection capability existing USAF contracts. For a tied to this development activity	ASARS-2A,	•	- 1		-		-			·
(U)	E. Schedule Profile					FY 2002		FY 2	003	FV	2004
						1 1 2002		112	<u> </u>	1.1	2007
Р	roject 4820				Page 5 of	12 Pages				Exhibit R-2A (F	PE 0305202F)

	RDT&E BUDGET ITEM JUSTIFICAT	ION	SHEE	ET (R-	-2A Ex	chibit	:)		DATI		oruary	2003	
	GET ACTIVITY - Operational System Development			MBER AN 202F	ID TITLE Drago	n U-2	(JMIP)	•			PROJ 482	
	E. Schedule Profile Continued			2002				2003			FY 2	.004	
		1	2	3	4	1	2	3	4	1	2	3	4
(U)	ASARS-2A Program - Begin IQI Activities - Continue IQI Activities	*					X			X			
(U) (U)	SYERS-2 Improvement Program - Begin SYERS P4I Development (4QFY01) ASIP						Λ			Λ			
(U) (U)	- Award Contract- Preliminary Design Review						X		X		**		
(U)	- Critical Design Review RF Int	at.									X		
	 Begin QRC Development Activities Continue QRC development programs Note: * denotes completed event, X denotes planned event. 	*				*							
F	Project 4820	Page	e 6 of 12	Pages					E	xhibit F	R-2A (PE	03052	02F)

	RDT&E PROG	RAM ELE	MENT/P	ROJECT C	OST BI	REAKDO	WN (R-3))	DATE F	ebruary 2	2003
	GET ACTIVITY Operational System I	Developme	nt		=	er and title 12F Drago	n U-2 (JM	IP)		_	PROJECT 4820
(U)	A. Project Cost Breakdown	(\$ in Thousan	<u>ds</u>)								
(II)	H 1 /0 C D 1							<u>2002</u>	FY 20		FY 2004
(U)	Hardware/Software Developm	nent						,952	9,0		35,500
(U)	Systems Engineering							,980 725	6,0		10,000
(U)	Government Costs Total							725	1,6		2,000
(U)	Total						14	,657	16,7	26	47,500
(U)	B. Budget Acquisition Histo	ry and Plannir	ng Information	n (\$ in Thousand	<u>ls)</u>						
(U)	Performing Organizations:										
	Contractor or	Contract									
	Government	Method/Type	Award or	Performing	Project						
	Performing	or Funding	Obligation	<u>Activity</u>	Office Office	Total Prior	Budget	Budget	Budget	Budget to	<u>Total</u>
	Activity	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	to FY 2002	FY 2002	FY 2003	FY 2004	Complete	<u>Program</u>
	Product Development Organiz	zations									
	Raytheon (ASARS-2A)	CPIF	3Q96	N/A	N/A	105,767	9,222	2,536	3,173	Continuing	TBD
	BF Goodrich (SYERS P4I)	CPFF	4Q02	N/A	N/A	4,954	1,880	0	0	0	6,834
	Raytheon (RF Int)	CPIF	3Q02	N/A	N/A	0	2,000	3,000	0	0	5,000
	Northrop Grumman (SIGINT	CPIF	3Q03	76,300	76,300	0	0	6,000	26,200	Continuing	TBD
	Sensor Development)										
	Northrop Grumman	CPIF	1Q04						16,127	Continuing	TBD
	(Collaborative SIGINT										
	Sensor)										
	Support and Management Org	ganizations									
	ASC/RA (from ASARS-2A)						575	400	400	Continuing	TBD
	ASC/RA (from SYERS P4I)						100	0	0	0	100
	ASC/RA (from RF Int)							500	0	0	500
	ASC/RA (from SIGINT							500	1,000	Continuing	TBD
	Sensor Development)										
P	roject 4820			Pag	e 7 of 12 Pa	.ges			Exhil	bit R-3 (PE	0305202F)

RDT&E PROGRAM ELEMENT/PR	OJECT COST BREAKDO	WN (R-3))	DATE February 2003				
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305202F Drago				F	PROJECT 1820		
(U) Performing Organizations Continued:								
<u>Test and Evaluation Organizations</u> Palmdale (ASARS-2A)		880	790	600	Continuing	ТВГ		
Palmdale (RF INT)		000	3,000	000	Continuing	3,000		
,	<u>Total Prior</u>	Budget	Budget	<u>Budget</u>	Budget to	Total		
Subtotals	to FY 2002	FY 2002	FY 2003	FY 2004	Complete	Progran		
Subtotal Product Development	110,721	13,102	11,536	45,500	TBD	TBD		
Subtotal Support and Management		675	1,400	1,400	TBD	TBD		
Subtotal Test and Evaluation	110 721	880	3,790	600 47,500	TBD TBD	TBD TBD		
Total Project	110,721	14,657	16,726	47,500	IBD	IBD		
Project 4820	Page 8 of 12 Pages			Exhil	oit R-3 (PE 03	305202F)		

RDT&E BUDGET ITEM													
BUDGET ACTIVITY 07 - Operational System Development										PROJECT 4945			
COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost			
4945 High Altitude Subsystems	15,691	6,860	5,018	0	0	0	0	0	Continuing	TBD			

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 for the U-2 aircraft.

(U) A. Mission Description

This project supports development and integration of subsystems on the U-2 (e.g., Advanced Defensive System (ADS or AN/ALQ-221) development, Link-16, and cockpit upgrades, navigator upgrades, datalinks).

The U-2 ADS (AN/ALQ-221) development provides a new Wide Band Radar Warning Receiver/Jammer for Search, Track and Launch Detection capability and Track and Launch Jamming capability. The new RWR/Jammer will integrate with the legacy 29E Low Band Receiver/Jammer, 29F Radar Warning Receiver, and portions of the System 29 Band Aid System.

The Fuels Conversion Program is an Air Force Research Laboratory research program attempting to develop a low temperature additive for JP-8 to substitute the current JPTS U-2 fuel. The additive will lower per gallon fuel costs and decrease the U-2's logistical footprint.

The Dual Data Link (DDL)-II Program provides the capability to transmit ISR data via dual, simultaneous, independent wideband datalinks.

The Link-16 program will demonstrate and integrate Link-16 compatiblity on the U-2 aircraft.

(U) <u>FY 2002 (\$ in Thousands)</u>

(U) \$0 Accomplishments/Planned Program

(U) \$12,979 Advanced Defensive System (ADS or AN/ALQ-221). Includes hardware/software development program and test program

(U) \$1,700 JP-8 Fuels Conversion

(U) \$1,012 Continue Dual Data Link - 2 NRE, integration and test

(U) \$15.691 Total

Project 4945 Page 9 of 12 Pages Exhibit R-2A (PE 0305202F)

	RDT&E BUD	GET IT	EM JUS	TIFICAT	TON SH	EET (R-	2A Exhil	oit)		February	y 2003
•	GET ACTIVITY - Operational System D	evelopm	ent		.	NUMBER AND 05202F		-2 (JMIP)			PROJECT 4945
(U)	A. Mission Description Conti	nued									
(U) (U) (U) (U) (U) (U) (U)	\$3,850 Comple \$150 LINK-1 \$109 JP-8 Fu	6 Integration els Conversio	lopment. Inc for AF/DCC	cludes hardw	rare/software	development	program and	l test progran	n.		
(U) (U) (U) (U) (U)	\$4,908 LINK-1	olishments/Pl 6 Integration els Conversio	for AFS/DC								
(U)	B. Project Change Summary Not Applicable										
(U)	C. Other Program Funding S	ummary (\$	in Thousand	<u>ls</u>)							
(U)	APAF - 0305202F - ADS	FY 2002 Actual	FY 2003 Estimate 40,606	FY 2004 Estimate 24,827	FY 2005 Estimate 10,920	FY 2006 Estimate 5,632	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete 0	<u>Total Cost</u> 81,985
(U) (U) (U)	Production Other - 0305202F - DDL-2 APAF - 0305202F - DDL-2 Other - 0305202F - LINK-16 Integration for AF/DCGS	20,000 7,200 5,000	17,322	16,395	17,649	16,061	15,164			0 0 0	20,000 89,791 5,000
(U)	D. Acquisition Strategy Funds are for the engineering, r contractor which will be respon ABIT P3I into datalink design.	sible for deli	vering a tota	l system. Fo	or DDL-2, de		•	,			*
F	roject 4945				Page 10 of	f 12 Pages				Exhibit R-2A (P	E 0305202F)

	RDT&E BUDGET ITEM JUSTIFI	CATION	SHEE	ET (R-	-2A E	xhibit	:)		DAT		bruary	/ 2003	
	GET ACTIVITY - Operational System Development			MBER AN 202F	ID TITLE Drago	n U-2	(JMIP)			-	PRO 49 4	JECT !5
(U) (U) (U) (U) (U) (U) (U) (U) (U) (U)	U-2 ADS Milestone 2 (Occurred 2Q00) ADS Phase 2 Contract Award (3Q00) ADS First Prototype Delivery Begin ADS Testing Complete ADS Flight Tests DDL-II Development & Integration Contract Award DDL-II DT Testing Complete Complete DDL-II SIL Testing	*	0305			n U-2		2003 3	4 X	1 X	FY: 2		
	Project 4945	Page	: 11 of 12	2 Pages					Ī	≣xhibit F	R-2A (P	E 03052	202F)

	RDT&E PRO	GRAM ELE	EMENT/P	ROJECT C	OST BI	REAKDO	WN (R-3))	DATE F	ebruary 2	003
	SET ACTIVITY Operational Systen	n Developme	ent			ER AND TITLE D2F Drago	n U-2 (JM	IP)			PROJECT 4945
(U)	A. Project Cost Breakdov	vn (\$ in Thousan	ds)								
(II)	Handarana and Cafferina Da	1						<u>2002</u> ,339	FY 20 4,4		FY 2004 0
(U)	Hardware and Software De	evelopment						,559 ,552	2,00		Ü
(U)	Systems Engineering Government Costs							,552 800		20 20	4,888 130
(U) (U)	Total							,691	6,80		5,018
(0)							13	,091	0,00	30	3,018
(U)	B. Budget Acquisition His	tory and Plannii	ng Informatio	n (\$ in Thousand	ds)						
(U)	Performing Organization	<u>s:</u>									
	Contractor or	Contract									
	Government	Method/Type	Award or	<u>Performing</u>	Project						
	Performing	or Funding	Obligation	<u>Activity</u>	<u>Office</u>	Total Prior	Budget	<u>Budget</u>	<u>Budget</u>	Budget to	<u>Total</u>
	<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	to FY 2002	FY 2002	FY 2003	FY 2004	<u>Complete</u>	<u>Program</u>
	Product Development Orga										
	ADS Ctr	CPIF	Mar 00	53,775	53,775	40,442	10,133	2,930	0	0	53,505
	Fuels Conversion	CPIF	2Q02	3,060	3,060	1,141	1,552	109	110	Continuing	TBD
	DDL-II Dev and Test	CPIF	Various	7,727	7,727	4,000	976	2,751	0	0	7,727
	LINK-16 Integration	CPIF	3Q02	5,020	5,020	0	0	150	4,778	0	4,928
	Support and Management (<u>Organizations</u>									
	ASC/RA						180	420	130	Continuing	TBD
	Test and Evaluation Organi	zations									
	Eglin AFB, Edwards AFB			3,350	3,350		2,850	500	0	0	3,350
						Total Prior	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	Budget to	<u>Total</u>
	Subtotals					to FY 2002	FY 2002	FY 2003	FY 2004	<u>Complete</u>	<u>Program</u>
	Subtotal Product Developm					45,583	12,661	5,940	4,888	TBD	TBD
	Subtotal Support and Mana	•					180	420	130	TBD	TBD
	Subtotal Test and Evaluation	on					2,850	500	0	0	3,350
	Total Project					45,583	15,691	6,860	5,018	TBD	TBD
 P	roject 4945			Расе	e 12 of 12 Pa	ages			Exhil	oit R-3 (PE 0	305202F)