

## UNCLASSIFIED

PE NUMBER: 0305202F  
PE TITLE: Dragon U-2 (JMIP)

Exhibit R-2, RDT&E Budget Item Justification								DATE <b>February 2006</b>																																					
BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305202F Dragon U-2 (JMIP)</b>																																									
Cost (\$ in Millions)	FY 2005 Actual	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	83.862	10.013	0.000	0.000	0.000	0.000	0.000	Continuing	TBD																																				
4820 Sensor Development	77.703	9.486	0.000	0.000	0.000	0.000	0.000	Continuing	TBD																																				
4945 High Altitude Subsystems	6.159	0.527	0.000	0.000	0.000	0.000	0.000	Continuing	TBD																																				
<p>(U) <b><u>A. Mission Description and Budget Item Justification</u></b></p> <p>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 Intelligence Surveillance Reconnaissance (ISR) system. The RDT&amp;E portion of this program element funds efforts to develop enhancements and sustain the U-2 Dragon Lady ISR system. In addition to the RDT&amp;E funding, there are procurement funds associated with these developments.</p> <p>This program element will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to pursue joint, allied, and coalition interoperability.</p> <p>(U) <b><u>B. Program Change Summary (\$ in Millions)</u></b></p> <table style="width: 100%; margin-left: 40px;"> <thead> <tr> <th></th> <th style="text-align: right;"><u>FY 2005</u></th> <th style="text-align: right;"><u>FY 2006</u></th> <th style="text-align: right;"><u>FY 2007</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: right;">86.972</td> <td style="text-align: right;">10.158</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>(U) Current PBR/President's Budget</td> <td style="text-align: right;">83.862</td> <td style="text-align: right;">10.013</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>(U) Total Adjustments</td> <td style="text-align: right;">-3.110</td> <td style="text-align: right;">-0.145</td> <td></td> </tr> <tr> <td>(U) Congressional Program Reductions</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Congressional Rescissions</td> <td style="text-align: right;">-0.773</td> <td style="text-align: right;">-0.145</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Congressional Increases</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Reprogrammings</td> <td style="text-align: right;">-2.337</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">SBIR/STTR Transfer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) <b><u>Significant Program Changes:</u></b></p> <p>In FY06, all the U-2 Airborne Signals Intelligence Program (ASIP) development funding was transferred from the Dragon U-2 (JMIP) PE 0305202F, Project 674820 to the new Airborne SIGINT Enterprise PE 0304260F, and be distributed between Project 675181 (U-2 Integration) and Project 675183 (SIGINT Common Development).</p> <p>In FY07, Air Force Transformation Flight Plan identified the U-2 Weapons System for early retirement, divesting the fleet by FY12. A plan, schedule, and budget are being developed to synchronize the U-2 retirement schedule to the Global Hawk (GH) development and fielding schedule in order to provide uninterrupted, high-altitude, ISR capabilities during the U-2 to Global Hawk transistion. The DoD is committed to keeping he U-2 Fleet capable until it is removed from service. Accordingly, additional modifications will be required before FY12. These additional modifications will be considered during future budget year submissions. All future non-safety related modifications that are not expected to see at least five years of in-service use will be the subject of the "Sunset Law" waiver process.</p>											<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	(U) Previous President's Budget	86.972	10.158	0.000	(U) Current PBR/President's Budget	83.862	10.013	0.000	(U) Total Adjustments	-3.110	-0.145		(U) Congressional Program Reductions				Congressional Rescissions	-0.773	-0.145		Congressional Increases				Reprogrammings	-2.337			SBIR/STTR Transfer			
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Exhibit R-2a, RDT&E Project Justification								DATE <b>February 2006</b>	
BUDGET ACTIVITY <b>07 Operational System Development</b>				PE NUMBER AND TITLE <b>0305202F Dragon U-2 (JMIP)</b>			PROJECT NUMBER AND TITLE <b>4820 Sensor Development</b>		
Cost (\$ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4820 Sensor Development	77.703	9.486	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

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

This development project supports improvements to the U-2 sensors such as the Advanced Synthetic Aperture Radar System (ASARS-2A), advanced radar technology research such as foliage penetration, concealed target, and counter deception, SIGINT programs, and works in close cooperation with the ASIP program (PE 0304260F).

The ASARS-2A Program improves area search, precision geolocation, and image quality to support precision 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 and exploitation tools for the user (for example, system robustness, Dual Data Link (DDL), Beyond Line of Sight (BLOS) communications, image quality, Ground Moving Target Indication (GMTI), geolocation and targeting, sensor position data, Receiver Exciter Controller (REC) upgrades and software upgrades). The ongoing ASARS-2A Image Quality Improvement Program (IQIP) addresses system robustness and image quality performance identified during initial system fielding.

The Senior Year Electro-Optical Reconnaissance System (SYERS-2/2A) 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. A depot for the repair and refurbishing of SYERS sensors will be established and a second source vendor qualified for the focal planes.

The SIGINT Program develops new sensors such as the Airborne Signals Intelligence Program (ASIP), and 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 including Quick Reaction Capabilities (QRCs) to meet emerging operational requirements. The program has also examined and may modify current systems to allow them to function on Power/Electromagnetic Interference upgraded U-2s.

Plans for the testing and fielding of ASIP sensors on U-2 and Global Hawk are addressed in the Airborne SIGINT Enterprise exhibit (PE 0304260F).

All U-2 sensors and datalinks are being converted to the Asynchronous Transfer Mode (ATM) standard to address vanishing vendor issues and to optimize signals intelligence bandwidth allocation. Inherent in this transition is the incorporation of suitable security/encryption capabilities.

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 intelligence surveillance and reconnaissance (ISR) system.

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

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PE NUMBER AND TITLE

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PROJECT NUMBER AND TITLE

4820 Sensor Development

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Advanced Synthetic Aperture Radar System (ASARS-2A) Image Quality Improvement Program (IQIP)	15.240	3.184	
(U) Senior Year Electro-Optical Reconnaissance System (SYERS-2/2A)		5.793	
(U) Signals Intelligence (SIGINT) Sensor Development/Integration (Airborne Signals Intelligence Payload (ASIP)	62.463		
(U) ASIP U-2 Integration		0.509	
(U) Other Program Management/Systems Engineering			
(U) Total Cost	77.703	9.486	0.000

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

	<u>FY 2005</u> <u>Actual</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>
(U) RDT&E, PE 0305220F- Global Hawk ASIP Development	62.074							0.000	116.367
(U) * APAF, 0305220F- Global Hawk ASIP Production (BP10)				15.000	53.300	55.800	45.600	0.000	169.700
(U) * APAF, 0305220F- Global Hawk ASIP Production (BP 11)					52.900	50.300	33.300	112.600	249.100
(U) RDT&E, PE 0304260F, BP 675181- Airborne SIGINT Development- U-2		1.972	5.260	5.385	5.509	5.629	5.719	Continuing	TBD

\* FY09 APAF funding for Global Hawk ASIP was combined in the FY05 RDOC submission - BP10 and BP11 are now broken out.

(U) **D. Acquisition Strategy**

All contracts awarded based on full and open competition.

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## Exhibit R-3, RDT&amp;E Project Cost Analysis

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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2005</u> <u>Cost</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 Value</u> <u>of Contract</u>
(U) <u>Product Development</u>												
ASARS-2A Way Ahead Phase 2 Development	SS/CPIF	Raytheon, El Segundo	6.000	14.121	Jan-05	0.573	Mar-06			Continuing	TBD	TBD
Collaborative SIGINT Sensor- ASIP	SS/CPAF	Northrop Grumman Los Angeles	38.982	58.117	Aug-05					Continuing	TBD	TBD
SYERS-2	TBD	BF Goodrich, Boston				5.793	Apr-06			Continuing	TBD	
U-2 ASIP Integration	SS/CPIF	LM Aero, Palmdale, CA	1.486	4.149	Mar-05					Continuing	TBD	TBD
U-2 ASIP Integration	SS/CPIF	L3-Comm Garland, TX	0.145	0.197	Jan-05					Continuing	TBD	TBD
Subtotal Product Development			46.613	76.584		6.366		0.000		Continuing	TBD	TBD
Remarks:												
(U) <u>Test &amp; Evaluation</u>												
Flight Test	SS/CP	LM Aero, Palmdale, CA	1.573	0.569	Jul-05	1.200	Jun-06			Continuing	TBD	TBD
Subtotal Test & Evaluation			1.573	0.569		1.200		0.000		Continuing	TBD	TBD
Remarks:												
(U) <u>Management</u>												
RSW/U2SF	C/FFP	Various	0.485	0.550	Mar-05	1.920	Dec-05			Continuing	TBD	TBD
Subtotal Management			0.485	0.550		1.920		0.000		Continuing	TBD	TBD
Remarks:												
(U) Total Cost			48.671	77.703		9.486		0.000		Continuing	TBD	TBD

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

DATE

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0305202F Dragon U-2 (JMIP)

PROJECT NUMBER AND TITLE

4820 Sensor Development



U.S. AIR FORCE

U-2

SYERS



ASARS-2A IQIP



ASIP Development



Development

Production



Fielding

*Integrity - Service - Excellence*

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

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February 2006

BUDGET ACTIVITY

**07 Operational System Development**

PE NUMBER AND TITLE

**0305202F Dragon U-2 (JMIP)**

PROJECT NUMBER AND TITLE

**4820 Sensor Development**(U) **Schedule Profile**FY 2005FY 2006FY 2007

(U) ASARS-2A- Continue Image Quality Improvement Activities

1Q

1Q

(U) ASARS-2A S/W Interim Delivery

4Q

(U) ASARS-2A H/W First Article

3Q

(U) ASARS-2A H/W Last Article

4Q

(U) ASARS-2A S/W Final Delivery

4Q

(U) ASIP Development

1-4Q

(U) ASIP Development - CDR

2Q

(U) ASIP Development - FAT

4Q

(U) ASIP Development - Capability Demonstration

3Q

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07 Operational System Development

PE NUMBER AND TITLE

0305202F Dragon U-2 (JMIP)

PROJECT NUMBER AND TITLE

4945 High Altitude Subsystems

Cost (\$ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4945 High Altitude Subsystems	6.159	0.527	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

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

This project supports development and integration of subsystems on the U-2 (e.g., cockpit upgrades that include a glass cockpit with Electro-Optical View Sight (EOVS), Direct Threat Warning, navigator upgrades, datalinks) and compliance with Communications, Navigation, Surveillance/Air Traffic Management CNS/ATM requirements.

EOVS replaces the legacy optical drift sight that was removed in the U-2 Block 20 upgrade. The controls for the EOVS camera are in the legacy hand controller, and the image will be displayed in the cockpit on one Multi-function Display (MFD), when selected.

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

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Electro-Optical View Sight (EOVS) development	4.228		
(U) Dual Data Link 2 (DDL2) development	1.353		
(U) RSW/U2SF DSM	0.578	0.527	
(U) Total Cost	6.159	0.527	0.000

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

	<u>FY 2005</u> <u>Actual</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>
(U) APAF - 0305202F - Data Links	19.068	17.506							
(U) APAF - 0305202F - EOVS		5.470							5.470
(U) APAF - 0305202F -ADS	8.300	3.300							11.600

(U) **D. Acquisition Strategy**

Utilize mix of sole source and open competition as appropriate for the U-2 program to sustain and update platform sub-systems as required in order to maintain operational effectiveness.

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## Exhibit R-3, RDT&amp;E Project Cost Analysis

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4945 High Altitude Subsystems

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2005</u> <u>Cost</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 Value</u> <u>of Contract</u>
(U) <u>Product Development</u>												
Electro-optical View Sight (EOVS)	SS/FFP	LM Aero, Palmdale, CA	2.300	4.188	Jan-05					0.000	6.488	TBD
DDL2 EMD	SS/CPIF	L3 Comm, Salt Lake City	22.559	0.498	Nov-04					0.000	23.057	TBD
DDL2 EMD	SS/CPIF	LM Aero, Palmdale, CA	5.401								5.401	
DDL2 WMA Dev	SS/FFP	L3 Comm, Salt Lake City		0.855	Jan-06					0.000	0.855	TBD
Subtotal Product Development			30.260	5.541		0.000		0.000		0.000	35.801	TBD
Remarks:												
(U) <u>Test &amp; Evaluation</u>												
Flight Test			1.035								1.035	TBD
Subtotal Test & Evaluation			1.035	0.000		0.000		0.000		0.000	1.035	TBD
Remarks:												
(U) <u>Management</u>												
RSW/U2SF DSM	C/FFP	Various	2.439	0.618	Dec-04	0.527	Apr-06				3.584	TBD
Subtotal Management			2.439	0.618		0.527		0.000		0.000	3.584	TBD
Remarks:												
(U) Total Cost			33.734	6.159		0.527		0.000		0.000	40.420	TBD



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Exhibit R-4, RDT&E Schedule Profile

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4945 High Altitude Subsystems



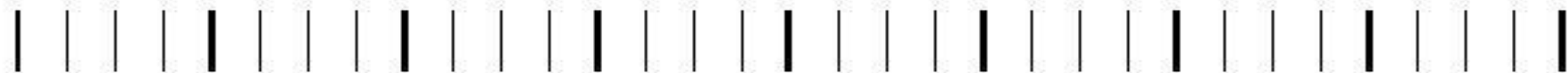
U.S. AIR FORCE

U-2

EOVS



DDL



FY05

FY06

FY07

FY08

FY09

FY10

FY11

FY12

Development

Production



Fielding

*Integrity - Service - Excellence*

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

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**07 Operational System Development**

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**0305202F Dragon U-2 (JMIP)**

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**4945 High Altitude Subsystems**(U) **Schedule Profile**FY 2005FY 2006FY 2007

(U) DDL2 First Article Delivery

4Q

(U) DDL2 Full Rate Production Contract Award

3Q

(U) DDL2 EMD Contract Completion

1Q

(U) EOVS EMD Contract Completion

3Q