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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000		
BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>				PE NUMBER AND TITLE <b>0604706F Life Support Systems</b>				PROJECT <b>65412A</b>		
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
65412A	Life Support Systems	6,763	11,473	14,758	14,121	4,303	2,872	3,363	0	90,556
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
<p>(U) <b><u>A. Mission Description</u></b>            This program provides for Engineering and Manufacturing Development (EMD) of life support equipment and subsystems to satisfy operational command requirements for improved life support equipment. There are five main projects in this PE. The Advanced Concept Ejection Seat (ACES) II Cooperative Improvement Program develops modifications for ACES II to accommodate lightweight aircrew members and high speed ejection. The K-36/3.5A Qualification Program will expand the US industry base by introducing a new ejection seat manufacturer and improve aircrew safety during high speed ejections. The Inflatable Restraint (IR) project leverages inflatable bag technology to improve ejection safety. The Advanced Technology Anti-Gravity Suit (ATAGS) replaces the current G-suit, enabling aircrew members to endure the high G-forces of modern aircraft. The Laser Eye Protection (LEP) project will provide aircrews with eye protection against a variety of laser devices which could cause a permanent loss of vision. This PE also provides for the continuing development of life support items and subsystems such as the following: flight helmets, oxygen breathing equipment for aviators, survival radios, night vision devices, active/passive noise reduction devices, and parachute releases. Program management support includes tasks to assess deficiencies of currently fielded equipment, provide for the transition of new technology into EMD, and to support all current life support projects.</p>										
<p>(U) <b><u>FY 1999 (\$ in Thousands)</u></b></p>										
(U)	\$3,414	Continued Advanced Concept Ejection Seat (ACES) II Cooperative Improvement Program (CIP) Engineering and Manufacturing Development								
(U)	\$2,376	Initiated EMD of ejection seat inflatable restraints using FY99 Congressional Add								
(U)	\$900	Initiated Laser Eye Protection EMD								
(U)	\$43	Continued Advanced Technology Anti-G Suit EMD								
(U)	\$30	Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles								
(U)	\$6,763	Total								

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<b>05 - Engineering and Manufacturing Development</b>		<b>0604706F Life Support Systems</b>		<b>65412A</b>	
<b>(U) <u>A. Mission Description Continued</u></b>					
<b>(U) <u>FY 2000 (\$ in Thousands)</u></b>					
(U)	\$3,000	Congressional Add for the continuation of EMD for ejection seat inflatable restraints			
(U)	\$2,500	Congressional Add for Life Support Systems (will be used to continue EMD of ATAGS (\$1.4M) and produce Fixed Seat Standardization Study (\$1.1M))			
(U)	\$1,637	Continue Laser Eye Protection EMD			
(U)	\$4,129	Continue ACES II CIP EMD			
(U)	\$207	Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles			
(U)	\$11,473	Total			
<b>(U) <u>FY 2001 (\$ in Thousands)</u></b>					
(U)	\$6,250	Initiate K-36/3.5A Ejection Seat Qualification Program			
(U)	\$3,127	Continue Laser Eye Protection EMD			
(U)	\$4,634	Complete ACES II CIP EMD			
(U)	\$146	Continue Inflatable Restraint EMD			
(U)	\$336	Complete ATAGS EMD and Production Support Costs			
(U)	\$265	Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles			
(U)	\$14,758	Total			
<b>(U) <u>B. Budget Activity Justification</u></b>					
Program is in Budget Activity 5 because several projects are in Acquisition Phase II, EMD					
<b>(U) <u>C. Program Change Summary (\$ in Thousands)</u></b>					
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U)	Previous President's Budget (FY 2000 PBR)	6,108	6,135	8,388	58,915
(U)	Appropriated Value	6,244	11,635		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-118	-11		
	b. Small Business Innovative Research	-164			
	c. Omnibus or Other Above Threshold Reprogram		-78		
Project 65412A		Page 2 of 7 Pages		Exhibit R-2 (PE 0604706F)	

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BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>				PE NUMBER AND TITLE <b>0604706F Life Support Systems</b>			PROJECT <b>65412A</b>		
<b>(U) C. Program Change Summary (\$ in Thousands) Continued</b>									
		<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>Total Cost</u>
	d. Below Threshold Reprogram	857							
	e. Rescissions	-56	-73						
	f. Other								
(U)	Adjustments to Budget Years Since FY 2000 PBR							6,370	31,641
(U)	Current Budget Submit/FY 2001 PBR	6,763	11,473					14,758	90,556
<b>(U) Significant Program Changes:</b>									
FY 1999 Laser Eye Protection Program Acceleration (\$900); Cancelled year bill (-\$43)									
FY 2000 Congressional Add for EMD of ejections seat Inflatable Restraints (\$3M) and for Life Support Systems (\$2.5M)									
FY 2001 OSD Add to initiate of K-36/3.5A Ejection Seat Qualification Program.									
<b>(U) D. Other Program Funding Summary (\$ in Thousands)</b>									
		<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>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)	NATO Cooperative R&D PE 0603790F (AF funded) ACES II CIP	1,000	0	0	0	0	0	0	1,000
(U)	Item Less Than \$5M (Safety Equipment) PE 0702833F: Advanced Technology Anti-G Suit (ATAGS)			555					555
(U)	Item Less Than \$5M (Safety Equipment) PE 0702833F: Laser Eye Protection (LEP) FY00 Congressional Add for Laser Eye Protection (\$2400K)		2,400	1,200	2,800	4,520	3,920	1,400	16,240

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BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>	PE NUMBER AND TITLE <b>0604706F Life Support Systems</b>	PROJECT <b>65412A</b>
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(U) **E. Acquisition Strategy**  
 Acquisition strategy is carried out at the project level. Advanced Concept Ejection Seat (ACES) II is a joint project between the US and Japan. The US is responsible for improved seat stability and Japan is responsible for improved limb restraints and accommodations for lightweight aircrew. The US contracts are Sole Source with the Enhanced Drogue Chute and seat modifications engineered by Boeing/MDA through a Cost Plus Fixed Fee Contract. The Engineering and Manufacturing Development (EMD) effort is to be performed by Boeing through a Cost Plus Fixed Fee contract and Cost Plus Incentive Fee Contract. The ATAGS project consists of three Sole Source contracts with KRUG, Mustang, and SRL, respectively. The first two are Firm Fixed Price contracts with a Cost Plus Fixed Fee contract for SRL to conduct Direct Testing and Evaluation (DT&E) Support. The acquisition strategy for the Inflatable Restraints program, Laser Eye Protection program, and the K-36/3.5A Qualification program has not been established.

(U) **F. 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) ACES II Complete detail design					*							
(U) ACES II Sled Test Completion											X	
(U) ACES II OT&E Completed												X
(U) Inflatable Restraint Contract Award				*								
(U) Inflatable Restraint Study Completion									X			
(U) Inflatable Restraint EMD Contract Award								X				
(U) ATAGS Complete IOT&E										X		
(U) ATAGS Production Award											X	
(U) ATAGS First Production Delivery FY02												
(U) LEP EMD Contract Award								X				
(U) LEP CDR Phase 1									X			
(U) LEP Complete DT&E Phase I										X		
(U) LEP Complete IOT&E Phase I										X		
(U) LEP Production Award										X		
(U) K-36/3.5A Ejection Seat Qualification Contract Award									X			
(U) K-36/3.5A Ejection Seat Qualification Program Completion (FY05)												

\* = completed event  
 X = planned event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604706F Life Support Systems			PROJECT 65412A		
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>										
						<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>		
(U)	Contracts					4,088	8,062	10,220		
(U)	Technical Engineering Support					780	1,006	1,010		
(U)	Travel					184	193	115		
(U)	Government Testing					1,355	1,573	2,823		
(U)	Program Management/Technical Support and Misc.					356	639	590		
(U)	Total					6,763	11,473	14,758		
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>										
<b>(U) Performing Organizations:</b>										
<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>										
UPCO-Inflatable Rest	SS/CPAF	Aug 99	2,053	2,053	0	2,053	0	0	0	2,053
Entran Devices-ACES II	FFP	Sep 99	39	39	0	39	0	0	0	39
Boeing-ACES II Struc Def	SS/CPFF	Dec 99	200	200	0	0	200	0	0	200
ATA Sensors-ACES II	FFP	Mar 00	31	31	0	0	31	0	0	31
Gemini Elec Co-ACES II	FFP	May 99	9	9	0	9	0	0	0	9
Denton, Inc-ACES II	FFP	Sep 99	47	47	0	47	0	0	0	47
First Tech Sys-ACES II	FFP	Oct 99	393	393	0	193	200	0	0	393
Boeing-ACES II --Study	SS/CPFF	Aug 99	237	237	0	37	200	0	0	237
Pioneer Aerospace-ACESII	FFP	Jan 99	9	9	0	9	0	0	0	9
EME Corp-ACES II	FFP	Mar 00	244	244	0	0	244	0	0	244
ITT-NVS	C/CPIF	18 Jan 93	14,081	14,081	14,081	0	0	0	0	14,081
KRUG-ATAGS	SS/FFP	7 July 97	424	424	424	0	0	0	0	424
Mustang-ATAGS	SS/FFP	Sep 97	499	499	499	0	0	0	0	499
LEP - (AL/Navy)	C/CPFF	Jun 97	4,552	4,552	4,552	0	0	0	0	4,552
MDA-Enhanced Drogue	SS/CPFF	Jun 97	1,130	1,130	1,130	0	0	0	0	1,130
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<b>(U) Performing Organizations Continued:</b>										
<u>Product Development Organizations</u>										
MDA-ACES II Seats	SS/FFP	Sept 97	150	150	150	0	0	0	0	150
SRL-ATAGS DT&E Support	SS/CPFF	Dec 97	150	150	150	0	0	0	0	150
Boeing-ACES II Pre-EMD	SS/CPFF	Feb 98	250	250	250	0	0	0	0	250
Brooks AFB, Supply	Supply Reqt	Feb 98	311	311	301	10	0	0	0	311
Contax	SS/FFP	Apr 98	11	11	11	0	0	0	0	11
Boeing-ACES II EMD	SS/CPIF	Dec 98	5,004	5,004	0	1,659	1,567	1,700	0	4,926
Pax River	AF 185	Aug 99	147	147	0	27	120	0	0	147
Holloman AFB	AF 185	Nov 99	5	5	0	5	0	0	0	5
LEP, TBD	C/CPIF	Mar 00	6,835	6,835	0	0		2,270	4,565	6,835
K-36, TBD	TBD	TBD	23,750	23,750	0	0	0	6,250	17,000	23,250
Inflatable Restraints, TBD	C/CPIF	Sep 00	3,000	3,000	0	0	3,000	0	0	3,000
Life Support Systems, TBD	TBD	TBD	2,500	2,500	0	0	2,500	0	0	2,500
<u>Support and Management Organizations</u>										
Program Management			5,601	5,601	2,878	356	639	590	1,138	5,601
Support										
Travel			1,273	1,273	581	184	193	115	200	1,273
Tech Eng & Acq			6,941	6,941	3,058	780	1,006	1,010	1,087	6,941
<u>Test and Evaluation Organizations</u>										
Edwards Test Facility	AF 185		100	100	0	100				100
AFFTC	Proj		3,146	3,146	3,146	0	0	0	0	3,146
	Ord-Variou									
AL/CF	Various		179	179	179	0	0	0	0	179
Holloman	Various		2,864	2,864	164	0	200	2,500	0	2,864
AFRL (incl. Ejection Seat Effort)	Various		4,951	4,951	1,337	1,255	1,373	323	663	4,951

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BUDGET ACTIVITY 05 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604706F Life Support Systems				PROJECT 65412A		
<b>(U) Government Furnished Property:</b>										
	<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>Total</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>Program</u>	
<u>Product Development Property</u>										
LEP		TBD		12	0	0	0	6	18	
<u>Support and Management Property</u>										
<u>Test and Evaluation Property</u>										
				<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				21,560	4,088	8,062	10,220	21,571	65,501	
Subtotal Support and Management				6,517	1,320	1,838	1,715	2,425	13,815	
Subtotal Test and Evaluation				4,826	1,355	1,573	2,823	663	11,240	
Total Project				32,903	6,763	11,473	14,758	24,659	90,556	