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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604706F I Life Support Systems							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	8.710	9.060	8.919	0.000	8.919	8.624	18.701	18.909	19.253	Continuing	Continuing
65412A: Life Support Systems	-	8.710	9.060	8.919	0.000	8.919	8.624	18.701	18.909	19.253	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This program saves Airmen's lives and improves aircrew performance through better aircrew flight equipment and airman combat systems. Air Force acquisition teams lead the upgrade and fielding of new equipment/systems by assessing deficiencies in existing equipment, identifying and assessing existing products or developing new technology, and conducting required Safe-to-Fly tests, certifications, and studies. Program efforts include, but are not limited to, the following projects: directed energy protective equipment; flight helmets and visors; oxygen breathing systems for aircrew; radios and locator beacons; support equipment; nuclear flash blindness protection; night vision devices; noise reduction devices; anti-gravity (anti-G) suits; flame resistant, retardant and blast/ballistic protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection seats; and other aircrew/life support/ground crew systems required by the warfighter.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver these described capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

BA 5 - This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	7.520	9.060	8.987	0.000	8.987
Current President's Budget	8.710	9.060	8.919	0.000	8.919
Total Adjustments	1.190	0.000	-0.068	0.000	-0.068
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.451	0.000			
• SBIR/STTR Transfer	-0.261	0.000			
• Other Adjustments	0.000	0.000	-0.068	0.000	-0.068

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Change Summary Explanation FY17 funding increased due to BTR for Night Vision Goggle UON testing \$1.451M. SBIR Adjustment of -\$0.261M.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Title: Aircrew Performance Studies/Technology Projects and Minor Development Efforts  Description: Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) Safe-to-Fly (STF) testing certification, addressing Safety Investigation Board (SIB) recommendations, along with studies and analysis. In addition, funding is for efforts that are responses to real-time capability gaps identified by the warfighter which may be satisfied by testing and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts that require less than \$10M per year related to aircrew flight equipment and life support equipment. Previous successful efforts may evolve into enduring capabilities as other users / MAJCOMs seek to incorporate these STF assets into their inventory. The Cold Weather Aviation System (CWAS), Aircrew Body Armor (ABA), BA-X Low Profile Parachute (LPP) and Nuclear Flash Blindness Goggles (NFBG) are currently the active programs within Life Support Systems (LSS). Funds may be used to address associated emerging aircrew/ground crew/egress requirements and for program management activities.  FY 2018 Plans: Perform STF testing and certification of COTS products. Continuation of test for Ballistic Aircrew Helmet and ABH improvements for reliability and acceptability for introduction to Air Force inventory. Address SIB recommendations. Formulate an acquisition strategy for next generation nuclear flash blindness technology. Continue the development efforts of aircrew laser eye protection (ALEP), radio modernization and improvement of parachute/flotation devices.  FY 2019 Plans: Perform STF testing and certification of COTS products. Address SIB recommendations. Formulate an acquisition strategy for next generation nuclear flash blindness technology. Continue the development/test efforts of aircrew laser eye protection (ALEP), radio modernization, next generation fixed wing helmet, and improvement of parachute/flotation devices.  FY 2018 to FY 2019 Increase/Decrease Statement: Minimal increase dues to ALEP Block 3 development efforts.		3.254	4.335	5.858
Title: Integrated Aircrew Ensemble (IAE)  Description: The Integrated Aircrew Ensemble (IAE) is a multi-layer battle ready system of protective clothing, survival equipment, and anti-G protection equipment worn by aircrew members. The ensemble can layer up to seven (7) components allowing for flexible combinations depending on aircraft type, mission, and threat. Each component design is unique but engineered as a single integrated ensemble to improve mobility by reducing bulk, reducing aircrew fatigue from thermal stress using new breathable materials, and increasing overall system performance. The ensemble components are: 1) outer flight layer,		5.153	3.800	2.261

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
2) Environmental Protection Layer (EPL) with gloves, 3) Chemical Biological Radiological Layer (CBRL) with glove inserts, 4) Life Preserver Unit (LPU), 5) Counter Chest Pressure Bladder (CCPB), 6) survival vest, and 7) G-suit.  <b>FY 2018 Plans:</b> Continue Low Rate Initial Production (LRIP) and Initial Operational Testing and Evaluation. Begin modification planning for the IAE Rotary/Fixed Wing variant.  <b>FY 2019 Plans:</b> Complete Low Rate Initial Production (LRIP) and Initial Operational Testing and Evaluation. Begin modification efforts for the IAE Rotary/Fixed Wing variant.  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> IOT&E of Ejection Seat Aircraft will be completing in mid-FY19.				
<b>Title:</b> Advanced Concept Ejection Seat <b>Description:</b> Ejection Seat upgrade for B-2  <b>FY 2018 Plans:</b> Complete Qualification testing of the ACES II SSIP for B-2. <b>FY 2019 Plans:</b> N/A  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Program to complete RDT&E efforts in FY18		0.303	0.125	0.000
<b>Title:</b> Next Generation Ejection Seat <b>Description:</b> The new ejection seat escape system shall safely accommodate greater variation in aircrew minimum/maximum weights, a minimum aircrew sitting height of 31 inches, and the use of Helmet Mounted Displays. It shall reduce the risk of injuries to the arms and legs (especially limb flail), neck, and spinal column throughout the entire ejection event.  <b>FY 2018 Plans:</b> Program costs associated with awarding EMD contract to begin qualification testing of selected seat.  <b>FY 2019 Plans:</b> Program costs associated with awarding EMD contract to begin qualification testing of selected seat and receive long lead items.		0.000	0.800	0.800
<b>Accomplishments/Planned Programs Subtotals</b>		8.710	9.060	8.919

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0604706F / <i>Life Support Systems</i>						
<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 04 Line Item 842990: <i>Items Less Than \$5 Million (Safety and Rescue Equipment)</i>	13.814	28.969	24.043	-	24.043	22.206	22.607	155.324	158.119	Continuing	Continuing
<b>Remarks</b>											
<b>E. Acquisition Strategy</b> The majority of efforts funded in this project employ a streamlined acquisition approach. Whenever practical, Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) items are tested and evaluated as candidates for solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure GOTS/COTS equipment is properly certified and adapted for military purposes. However, acquisition strategies may be carried out at the project level for traditional Engineering and Manufacturing Development (EMD), e.g., Integrated Aircrew Ensemble (IAE) and Aircrew Laser Eye Protection (ALEP) Block III. Funds may be used to address associated emerging aircrew/ground crew/egress requirements and for program management activities.											
<b>F. Performance Metrics</b> Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604706F / Life Support Systems				Project (Number/Name) 65412A / Life Support Systems					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircrew Performance Studies/Technology Projects/Minor Development Efforts	Various	Multiple Contractors : NV	-	1.895		2.835		4.043		-		4.043	Continuing	Continuing	-
Integrated Aircrew Ensemble (IAE)	C/FPIF	Tiax : Lexington, MA	-	4.550	Aug 2017	3.400	Mar 2018	1.950	Dec 2018	-		1.950	Continuing	Continuing	-
Advanced Concept Ejection Seat (ACES)	SS/FFP	United Technologies Aerospace Sys : Colorado Springs, CO	-	0.240	Mar 2018	0.125	May 2018	0.000		-		0.000	Continuing	Continuing	-
Next Generation Ejection Seat	TBD	TBD : NV	-	-		0.800	Dec 2018	0.800	Dec 2018	-		0.800	Continuing	Continuing	-
Subtotal			-	6.685		7.160		6.793		-		6.793	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Tests (IAE, ACES, CWAS, etc.)	Various	Various : Various, NV	-	1.275	Jul 2017	1.125	Feb 2018	1.325	Feb 2019	-		1.325	Continuing	Continuing	-
Subtotal			-	1.275		1.125		1.325		-		1.325	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	TBD	AFLCMC : Wright-Patterson AFB, OH	-	0.750		0.775		0.801		-		0.801	Continuing	Continuing	-
Subtotal			-	0.750		0.775		0.801		-		0.801	Continuing	Continuing	N/A
Remarks															
PMA Description: Program Management Support and Travel.															

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Air Force										<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604706F / <i>Life Support Systems</i>				<b>Project (Number/Name)</b> 65412A / <i>Life Support Systems</i>				
	<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	8.710		9.060		8.919		-		8.919	Continuing	Continuing	N/A
<b>Remarks</b>													

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Exhibit R-4, RDT&amp;E Schedule Profile: PB 2019 Air Force

Date: February 2018

Appropriation/Budget Activity

3600 / 5

R-1 Program Element (Number/Name)

PE 0604706F / Life Support Systems

Project (Number/Name)

65412A / Life Support Systems

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Life Support Systems RDTE Efforts</b>																												
IAE [Engineering and Manufacturing Development]																												
IAE [Milestone C]																												
IAE [Low Rate Initial Production] Test Assets for IOT&E																												
IAE [Initial Operational Test & Evaluation]																												
IAE [Rotary Wing Variant]																												
Advanced Concept Ejection Seat (ACES) Qualification Testing																												
Next Generation Ejection Seat Pre-Contract Award Activities																												
Next Generation Ejection Seat Contract Award																												
Next Generation Ejection Seat Qualification Effort																												
Aircrew Performance Aircrew Laser Eye Protection Block 3 Development Award																												
Aircrew Performance Next Generation Fixed Wing Helmet Development Award																												
Continue projects in support of Aircrew Performance																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604706F / <i>Life Support Systems</i>	<b>Project (Number/Name)</b> 65412A / <i>Life Support Systems</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Life Support Systems RDTE Efforts</i></b>				
IAE [Engineering and Manufacturing Development]	1	2017	3	2017
IAE [Milestone C]	4	2017	4	2017
IAE [Low Rate Initial Production] Test Assets for IOT&E	4	2017	2	2018
IAE [Initial Operational Test & Evaluation]	2	2018	2	2019
IAE [Rotary Wing Variant]	2	2019	2	2021
Advanced Concept Ejection Seat (ACES) Qualification Testing	1	2017	2	2018
Next Generation Ejection Seat Pre-Contract Award Activities	2	2018	1	2019
Next Generation Ejection Seat Contract Award	1	2019	1	2019
Next Generation Ejection Seat Qualification Effort	1	2019	4	2023
Aircrew Performance Aircrew Laser Eye Protection Block 3 Development Award	1	2019	1	2019
Aircrew Performance Next Generation Fixed Wing Helmet Development Award	2	2019	2	2019
Continue projects in support of Aircrew Performance	1	2017	4	2023