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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

<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>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	22.335	50.042	39.301	0.000	39.301	25.457	26.341	30.026	31.113	Continuing	Continuing
65412A: <i>Life Support Systems</i>	-	22.335	50.042	39.301	0.000	39.301	25.457	26.341	30.026	31.113	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 and 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; all types of flight suits and ensembles to protect aircrew against environmental threats; anti-gravity (anti-G) suits; flame resistant, retardant and blast/ballistic protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection systems; post-ejection survival systems; physiological monitoring devices and other aircrew, life support, and ground crew systems required by the warfighter.

The total cost of the Next Gen Fixed Wing Helmet (NGFWH) Middle Tier of Acquisition effort is \$15.1M, including RDT&E. The NGFWH program is fully funded across the Future Years Defense Program.

The FY2024 funding request was reduced by \$8.737 million to account for the availability of prior year execution balances

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY22 \$1.273M was expended for civilian pay expenses in this program element, and in FY23 \$1.491M is forecasted for civilian pay expenses in this program.

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.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	25.437	47.442	27.975	0.000	27.975
Current President's Budget	22.335	50.042	39.301	0.000	39.301
Total Adjustments	-3.102	2.600	11.326	0.000	11.326
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.400			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	5.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-2.310	0.000			
• SBIR/STTR Transfer	-0.792	0.000			
• Other Adjustments	0.000	0.000	11.326	0.000	11.326

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 65412A: *Life Support Systems*

Congressional Add: *Physiological Monitoring*

Congressional Add Subtotals for Project: 65412A

Congressional Add Totals for all Projects

	<b>FY 2022</b>	<b>FY 2023</b>
	-	5.000
	-	5.000
	-	5.000

**Change Summary Explanation**

FY22 adjustments for Small Business Innovative Research (SBIR) and several reprogrammings

FY23 Congressional Directed Reduction: -2.4M NGES Contract Delay and add of \$5M for pilot physiological monitoring

FY24 increase of 11.3M to fund Life Support Systems requirements

**C. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Aircrew Performance Studies/Technology Projects and Minor Development Efforts	7.608	15.505	13.125
<b>Description:</b> 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 to aircrew flight and life support equipment that are less than \$10M per year total. Previous successful efforts may evolve into enduring capabilities as other users and MAJCOMs seek to incorporate these STF assets into their inventory. Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI), Next Generation Fixed Wing Helmet (NGFWH), BA-X Low Profile			

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>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, and egress requirements, and for program management activities.</p> <p><b>FY 2023 Plans:</b> Continue to perform STF testing and certification of COTS products. Address SIB recommendations. Continue the development and test efforts for Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI), radio frequency communication upgrades, Next Generation Fixed Wing Helmet, Next Generation Nuclear Flash Blindness technology, and improvement of parachute/flotation devices.</p> <p><b>FY 2024 Plans:</b> Continue to perform STF testing and certification of COTS products. Address SIB recommendations. Continue the development/test efforts of aircrew laser eye protection - technical insertion (ALEP-TI) radio upgrades, next generation fixed wing helmet, next generation nuclear flash blindness technology, and improvement of parachute/flotation devices.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease in budget authority is due to developmental efforts maturing in FY24.</p>				
<p><b>Title:</b> Next Generation Ejection Seat</p> <p><b>Description:</b> This effort includes the qualification, procurement, fielding and sustainment of an upgraded ejection seat escape system for ACES II-equipped aircraft. The new ejection seat escape system safely accommodates greater variation in aircrew minimum and maximum weights at minimum aircrew sitting height of 31 inches, including 59% of the female pilot population, and the use of Helmet Mounted Displays. It reduces the risk of injuries to the arms and legs (especially due to limb flail), neck, and spinal column throughout ejection phases.</p> <p><b>FY 2023 Plans:</b> Continue contract effort awarded for aircraft integration qualification testing for follow-on NGES variants. Initial platform critical design review, test readiness review, and start of delta qualification sled testing. F-16 is scheduled to begin in FY23 to support continuous ejection system qualification.</p> <p><b>FY 2024 Plans:</b> Complete initial platform (F-15) delta qualification sled testing. Continue F-16 aircraft integration qualification testing. F-22 is scheduled to begin in FY24 to support continuous ejection system qualification.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>		10.000	22.191	21.326

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
Decrease in budget authority is due to developmental efforts maturing in FY24.			
<b>Title:</b> Female Airmen Equipment	4.727	7.346	4.850
<b>Description:</b> Female Fitment within Human Systems Division (HSD) of the Air Force Life Cycle Management Center develops and sustains organizational clothing and individual equipment (OCIE) & personal protective equipment (PPE) for female Airmen to enhance mission performance while improving safety and survival. HSD assigned Female Fitment as a top priority, matching CSAF vision, and ensures that the fullest extent of the AF female anthropometric range is incorporated into all of its programs. Outreach with other AF organizations and sister services ensures that requirements are collected to vector current and future programs. Anthropometric data collection ensures that these programs produce the OCIE and PPE that will allow women to perform their best in the missions they are assigned. OCIE and PPE for female aircrew includes, but is not limited to, the development and refinement of flight suits, bladder relief systems, helmets, ejection seats, G-suits, aircrew body armor, oxygen masks, and feedback mechanisms.			
<b>FY 2023 Plans:</b> Continue testing and development of female flight equipment: Items anticipated to be worked include, but not limited to, the AF GearFit, aircrew harness, anthropometric studies			
<b>FY 2024 Plans:</b> Continue testing and development of female flight equipment: Items anticipated to be worked include, but not limited to, the AF GearFit App, aircrew harness, and anthropometric studies. Begin testing on in-flight bladder relief systems.			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease in FY24 due to ability to leverage collected anthropometric data gathered during previous programs for use in all future efforts.			
<b>Accomplishments/Planned Programs Subtotals</b>	22.335	45.042	39.301

	<b>FY 2022</b>	<b>FY 2023</b>
<b>Congressional Add:</b> Physiological Monitoring	-	5.000
<b>FY 2023 Plans:</b> Aircrew Physiological Monitoring Incident Monitoring and Alerting (APIMA) Congressional Add will be used to assist with requirements maturation and Concept of Operations development for the real time monitoring and alerting of pilot cardiorespiratory performance and quality of breathing gas to assist in physiological event prevention.		
<b>Congressional Adds Subtotals</b>	-	5.000

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 04 Line Item 842990: <i>Items Less Than \$5 Million</i> <i>(Safety and Rescue Equipment)</i>	74.247	105.776	60.473	-	60.473	106.236	94.711	98.131	99.151	Continuing	Continuing

**Remarks**

**E. Acquisition Strategy**

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 - Technical Insertion (ALEP-TI). Funds may be used to address associated emerging aircrew/ground crew/egress requirements and for program management activities.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<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>
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Congressional Add for Physiological Monitoring	MIPR	DIU : Picatinny Arsenal, NJ	-	-		5.000		-		-		-	Continuing	Continuing	-
Aircrew Performance Studies/Technology Projects/Minor Development Efforts	Various	Multiple Contractors : TBD	-	6.328	Jan 2022	10.505		9.757		-		9.757	Continuing	Continuing	-
Next Generation Ejection Seat (NGES)	SS/CPFF	Collins Aerospace : Colorado Springs, CO	-	7.291	Feb 2022	22.191		19.741		-		19.741	Continuing	Continuing	-
Female Flight Equipment	Various	Multiple Contractors : TBD	-	4.727	Feb 2022	5.397		4.913		-		4.913	Continuing	Continuing	-
<b>Subtotal</b>			-	18.346		43.093		34.411		-		34.411	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Direct Cite Authority	TBD	AFLCMC : Wright-Patterson AFB, OH	-	1.209		1.209		1.522		-		1.522	Continuing	Continuing	-
<b>Subtotal</b>			-	1.209		1.209		1.522		-		1.522	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Tests (NGES, ACES, NGFWH, etc.)	Various	Various : Various, NV	-	2.130		4.750		2.308		-		2.308	Continuing	Continuing	-
<b>Subtotal</b>			-	2.130		4.750		2.308		-		2.308	Continuing	Continuing	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA)	TBD	AFLCMC : Wright-Patterson AFB, OH	-	0.650		0.990		1.060		-		1.060	Continuing	Continuing	-
<b>Subtotal</b>			-	0.650		0.990		1.060		-		1.060	Continuing	Continuing	N/A

**Remarks**  
PMA Description: Program Management Support and Travel.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	22.335	50.042	39.301	-	39.301	Continuing	Continuing	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

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FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
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><i>Life Support Systems RDTE Efforts</i></b>																												
Aircrew Performance Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI)																												
Continue projects in support of Aircrew Performance/Female Equipment																												
Aircrew Performance Next Generation Fixed Wing Helmet Development																												
Next Generation Ejection Seat Qualification Effort																												
Integrated Aircrew Ensemble G-Suit Redesign																												
Female Bladder Relief																												
A2CU-F																												
Maternity FDU																												
Physiological Monitoring																												

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**Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force** **Date:** March 2023

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Life Support Systems RDTE Efforts</i></b>				
Aircrew Performance Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI)	1	2022	3	2028
Continue projects in support of Aircrew Performance/Female Equipment	1	2022	4	2025
Aircrew Performance Next Generation Fixed Wing Helmet Development	1	2022	4	2023
Next Generation Ejection Seat Qualification Effort	1	2022	4	2027
Integrated Aircrew Ensemble G-Suit Redesign	1	2022	3	2024
Female Bladder Relief	2	2022	4	2027
A2CU-F	1	2022	4	2027
Maternity FDU	1	2022	4	2027
Physiological Monitoring	1	2022	4	2023